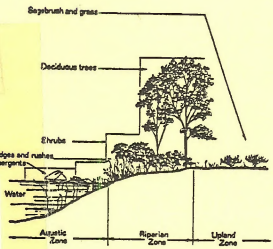
IDAHO BLM

TECHNICAL BULLETIN

Riparian Communities

An Annotated Bibliography of Ecosystem and Management Topics with Emphasis on the Intermountain West

by
Helen M. Fisher
and Allan E. Thomas



TECHNICAL BULLETIN 90-7
NOVEMBER 1990

BUREAU OF LAND MANAGEMENT
IDAHO STATE OFFICE
3380 Americana Terrace
Boise, Idaho 83706

RIPARIAN COMMUNITIES

An Annotated Bibliography of Ecosystem and Management Topics
with Emphasis on the Intermountain West.

by

Helen M. Fisher
Bureau of Land Management
Idaho State Office
Boise, ID 83702

and

Allan E. Thomas
Bureau of Land Management
Idaho State Office
Boise, ID 83702

United States Department of the Interior
Bureau of Land Management
Idaho
Technical Bulletin 90-7

November 1990

TABLE OF CONTENTS

INTRODUCTION

This technical bulletin updates and expands earlier bibliographies of riparian topics (Thomas and Wentzell, 1986; Clifton and Thomas, 1988). Sources of literature for this bibliography include published workshop and symposia proceedings (60 citations); reports issued by the U.S. Forest Service (29 citations), Fish and Wildlife Service (22 citations), Bureau of Land Management (14 citations), Soil Conservation Service (3 citations), Environmental Protection Agency (2 citations), and other Federal Government bodies (3 citations); reports issued by Institutes and Associations associated with seven western Universities (14 citations); reports published in scientific and technical journals (79 citations from 35 journals; a thesis; and several miscellaneous documents. Of 230 references, 187 were published since 1987.

Year of Reference	# References
1968-1985	18
1986	7
1987	18
1988	65
1989	80
1990	42

The primary focus of this bibliography is the ecology, description and management of riparian wetlands in the intermountain west (150 citations). In response to demands that riparian wetlands be characterized, recent research has addressed methods for classifying riparian areas (14 citations). The classification systems relate to existing and potential plant communities, soils, hydrology and geomorphology. A majority of wildlife species in the western rangelands require resources provided by riparian wetlands. Studies relating to biological diversity (28 citations), community ecology (20 citations), mammals (22 citations), riparian plant communities and vegetation (32 citations), and grazing (33 citations) reveal a limited understanding of complex species-habitat interactions in riparian wetlands. Human activities, past and present, in the western rangeland are threatening biological diversity. Watershed degradation and habitat fragmentation reduce the resilience of animal and plant populations to large environmental changes (global warming, 1 citation). Landscape inventory techniques, including computerized mapping techniques, are discussed in 7 citations.

Topics Relating to Riparian Wetlands	# References
Grazing	33
Biological Diversity	28
Mammals	22
Forested Riparian	22
Plant Communities	21
Community Ecology	20
Management	15
Classification	14
Soils	10

Topics Relating to Riparian Wetlands Cont...	# References
Ecosystems	9
Enhancement	8
General Riparian	8
Inventory	7
Restoration	6
Creation	3
Vegetation	3
Mitigation	3
Habitat Mitigation	2
Monitoring	2
Recovery	1
Conservation Policy	1
Habitat	1
Policy Evaluation	1
Global Warming Effects	1
Historical Uses	1
Evaluation	1
Fire Effects	1

The bibliography also includes general topics relating to streams (41 citations), non-riparian wetlands (34 citations), hydrology (33 citations), land use management (23 citations), water quality and resources (19 citations), soils (17 citations), watersheds (12), fisheries (12 citations), and geomorphology (3 citations). References are arranged alphabetically by the first author's name and each reference is assigned from one to six topics for cross referencing. The references included in this bibliography will be compiled with Thomas and Wentzell (1986) and Clifton and Thomas (1988) and will be adapted for use on a personal computer. Most of the references are on file in the Idaho State Office.

1. Alexander, E.B. (ed.). 1989. Proceedings of watershed '89: a conference on the stewardship of soil, air and water resources: Juneau, AK, March 21-23, 1989. U.S. Department of Agriculture, Forest Service, Alaska Region, Juneau, AK. 215 pp.

TOPICS: watershed hydrology, biological diversity
COMMENTS: Some papers relevant to riparian issues included in this bibliography.

2. Alexander, E.B., E. Kissinger, R.H. Huecker and P.Cullen. 1989. Soils of southeast Alaska as sinks for organic carbon fixed from atmospheric carbon dioxide. p. 203-210. In: E.B. Alexander (ed.), Proceedings of Watershed '89: A Conference on the Stewardship of Soil, Air, and Water Resources. U.S. Department of Agriculture, Forest Service, Alaska Region, Juneau, AK. 215 pp.

TOPICS: wetland soils, soil development
COMMENTS: Discusses the organic carbon (C) storage in histosols and other wet-soil orders, indicating a possible increase in organic C storage as glaciers recede.

3. Allen, E.O. 1968. Range use, foods, condition, and productivity of white-tailed deer in Montana. J. Wildl. Manage. 32(1):130-141.

TOPICS: white-tailed deer, wildlife habitat
COMMENTS: The study area included 20 bottoms and three islands of the Missouri River floodplain, Montana. Forty and 33 percent of summer deer (white-tailed deer, *Odocoileus viginianus*) observations, and 22 and 35 percent of fall deer observations were made in the meadow vegetation type (distributed generally throughout the floodplain) and alfalfa fields, respectively. Fifty percent of winter and 19 percent of spring observations were in the cottonwood type (adjacent to the river). Weed-infested fields accounted for 26 and 53 percent of winter and spring observations, respectively. Western snowberry (*Symphoricarpos occidentalis*), occurring in the cottonwood vegetation type, was the most important food type.

4. Amaranthus, M., H. Jubas and D. Arthur. 1989. Stream shading, summer streamflow and maximum water temperature following intense wildfire in headwater streams. p.75-78. In: Proceedings of the Symposium on Fire and Watershed Management; 1988, Sacramento, CA. Gen. Tech. Rep. PSW-109. Berkeley, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Forest and Range Experiment Station, 164p.

TOPICS: streamwater temperature, riparian forest, fire effects
COMMENTS: Adjacent headwater streams were monitored for postfire shade, summer streamflow and maximum water temperature following the Silver Complex fire in southern Oregon. Variation in maximum water temperature increase was strongly correlated to stream flow and percent total streamside shade. Dead vegetation provided the most shade.

5. Anonymous. 1986. Beaver management program for the Wood River Resource Conservation and Development Area. A report sponsored by the Blaine, Camas, Wood River, and Gooding Soil Conservation Districts. Wood River R.C. and D. Project assisted by the U.S. Department of Agriculture, Soil Conservation Service.

TOPICS: beaver, riparian management
COMMENTS: A beaver management committee has been formed by public and private land managers within the Wood River Resource and Conservation and Development Project Area. The report outlines the goals of this committee and its beaver management policy.

6. Anonymous. 1987. Montana Riparian Association bibliography. Montana Riparian Association, School of Forestry, University of Montana, Missoula, MT.

TOPICS: bibliography, riparian habitat, riparian management
COMMENTS: Alphabetically arranged by author, without annotation.

7. Anthony, R.G., E.D. Forsman, G.A. Green, G. Witmer, and S.K. Nelson. 1987. Small mammal populations in riparian zones of different-aged coniferous forests. The Murrelet 68:94-102.

TOPICS: small mammals, biological diversity, riparian forest
COMMENTS: Small mammals were trapped in riparian zones in young, mature, and old-growth coniferous forests in spring and summer of one year. More species, but fewer individuals, were captured on the streamside transects in comparison to the riparian fringe transects, 15-20 m from the stream. No species was solely dependent on riparian zones in old-growth forests, however, additional studies are needed. (from authors abstract)

8. Auble, G.T., D.B. Hamilton, J.E. Roelle, J. Clayton, L.H. Fredrickson. 1988. A prototype expert system for moist soil management. p. 137-143. In: Mutz, K.M., D.J. Cooper, M.L. Scott and L.K. Miller (eds.). Restoration, Creation, and Management of Wetland and Riparian Ecosystems in the American West. Symposium, Nov. 14-16, 1988, Denver CO: Rocky Mountain Chapter of the Society of Wetland Scientists, Denver CO. 239 pp.

TOPICS: soil moisture, management
COMMENTS: A computer program that suggests management regimes for a set of moist soil impoundments. The program meets a series of ranked habitat objectives by assigning management regimes to particular units, and considers unit characteristics such as vegetation and hydrologic constraints.

9. Baad, M.F. 1988. Soil-vegetation correlations within the riparian zone of Butte Sink in the Sacramento Valley of northern California. U.S. Fish Wildl. Serv. Biol. Rep. 88(25). 48 pp.

TOPICS: riparian classification, riparian plant communities, riparian soils
COMMENTS: The study tests a system for delineating wetlands by correlation of vegetation indices with soil types. Each plant was assigned a wetland indicator number, based on prepared plant lists or a provisional number for species not previously listed for the area. Vegetation indices included the wetland indicator and either the plant density or percent cover.

10. Bain, M.B. and J.T. Finn. 1988. Streamflow regulation and fish community structure. Ecology 69 (2):382-392.

TOPICS: aquatic habitat, stream flow regulation, fishery, biological diversity
COMMENTS: An abundant (>90% of all fish) and diverse (nine species) group of small-fish species and size classes were restricted to microhabitat that was characterized as shallow in depth, slow in current velocity, and concentrated along stream margins (tributaries of the Connecticut River, Vermont). This group of fish was reduced in abundance in the regulated river and absent at the study site with the greatest flow fluctuation. Another fish group included species and size classes that used either a broad range of habitat or a microhabitat that was deep, fast, or both, and was concentrated in midstream areas. The density of fish in this group was higher in the regulated river and peaked at the sites with the greatest fluctuations in flow. Highly variable and unpredictable flow regimes appear to be a high-frequency disturbance that affects fish differently depending on the way they use stream habitat and acts to reduce community complexity. (from authors' abstract)

11. Baker Jr., M.B. 1988? The diversity in streamflow response from upland basins in Arizona. (citation incomplete: author's address. U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station, Forestry Sciences Laboratory, Arizona State University, Tempe, AZ.)

TOPICS: stream flow response, soil depth
COMMENTS: Soil depth was used to explain hydrograph differences for study areas in Arizona during a wet year.

12. Baker, W.L. 1989. Classification of the riparian vegetation of the montane and subalpine zones in western Colorado. Great Basin Naturalist 49:214-228.

TOPICS: riparian classification, riparian forest, riparian plant communities
COMMENTS: A classification of relatively undisturbed riparian vegetation, remnant from pre-settlement vegetation, in western Colorado. Plant associations include montane riparian forests, subalpine riparian forests, lower subalpine willow carrs, upper subalpine willow carrs and a subalpine wetland.

13. Baldwin, M.F. 1987. Wetlands: fortifying federal and regional cooperation. Environment 29(7):17.

TOPICS: wetland protection, wetlands policy implementation
COMMENTS: Reviews the basis for federal government involvement in the protection of wetlands, recommends the strengthening of local and state programs by implementing an effective efficient wetland regulatory program under Section 404 of the Clean Water Act and by focussed planning to protect valuable and vulnerable wetlands in cooperation with other federal, state and local agencies, private groups and the public. (from author's introduction)

14. Barclay, J.S. 1980. Impact of stream alterations on riparian communities in southcentral Oklahoma. U.S. Department of the Interior, Fish and Wildlife Service, Biological Services Program: FWS/OBS-80/17. 91 p.

TOPICS: stream channelization, biological diversity, riparian vegetation, birds, mammals, amphibians, reptiles
COMMENTS: Evaluates the effects on bird, mammal, amphibian, and reptile populations of stream channelization and stream impoundment in the southern grasslands region, Oklahoma. Two channelized streams and one impounded stream, all major tributaries of the Washita River, were studied. Present day land use was usually the most apparent factor determining vegetation differences between sites. Altered flood patterns reduced productivity on channelized or impounded streams, however. Bird, amphibian, reptile and small mammal species richness was reduced on channelized sites. Impoundment effects tended towards lower species diversity and higher relative abundance on downstream sites.

15. Beaudry, P.G. 1989a. Hydrology of the Skeena River floodplains I: Implications to herbicide use. p. 165-171. In: E.B. Alexander (ed.), Proceedings of Watershed '89: A Conference on the Stewardship of Soil, Air, and Water Resources. U.S. Department of Agriculture, Forest Service, Alaska Region, Juneau, AK. 215 pp.

TOPICS: water quality, herbicide fate, floodplain hydrology
COMMENTS: Based on the annual groundwater regime, stratigraphy of deposits, soil characteristics, soil and air climates, and chemical/physical properties of herbicides, inferences were made about the probable herbicide fate in the coastal alluvial environment.

16. Beaudry, P.G. 1989b. Hydrology of the Skeena River Floodplains II: Flood hazard classification for silviculture. p. 173-178. In: E.B. Alexander (ed.), Proceedings of Watershed '89: A Conference on the Stewardship of Soil, Air, and Water Resources. U.S. Department of Agriculture, Forest Service, Alaska Region, Juneau, AK. 215 pp.

TOPICS: floodplain hydrology, planting, aerial photography
COMMENTS: A flood hazard classification system based on flood level for planting of sitka spruce.

17. Bezanson, C.E. and L.E. Hughes. 1989. A riparian zone-one story. Rangelands 11(2):56-57.

TOPICS: grazing systems, riparian enhancement, southwestern desert streams
COMMENTS: A brief case study of riparian vegetation enhancement by grazing management in "The Strip" of northwestern Arizona.

18. Blakesley, J.A. and K.R. Reese. 1988. Avian use of campground and noncampground sites in riparian zones. Journal of Wildlife Management 52(3):339-402.

TOPICS: bird communities
COMMENTS: Shrub, sapling and tree densities; cover of residual stems and deadwood; and litter depth were all lower in campground than noncampground plots. Differences in avian community composition appeared related to nesting substrate, cover, and foraging substrate.

19. Bledsoe, S. 1988. An alternative approach to the regulation of riparian management. In: Streamside Management: Riparian Wildlife and Forestry Interactions. p. 239-244. University Washington, Institute of Forest Resources, no. 59: Seattle, WA.

TOPICS: wetlands policy implementation
COMMENTS: A forest industry proponent, bureaucrat, regulator and legislator comments on regulatory approaches to riparian management with the conclusion that regulations are best designed to support site-specific decision making process and that monitoring is essential.

20. Boggs, K. 1990. A site classification with management information for riparian and wetland sites in northwest Montana. In: Montana Riparian Association. Management of Riparian and Wetland Forested Ecosystems in Montana: Fourth Annual Montana Riparian Association Workshop. 5-7 September, 1990 in Whitefish, MT: Montana Riparian Association, School of Forestry, University of Montana, Missoula, MT.

TOPICS: riparian classification, riparian plant communities
COMMENTS: Seral plant communities (community types) have, theoretically, not reached a steady state condition and, thus, some species are still being replaced by others. Seral communities may, however, remain stable for time frames relevant to land

management decisions. Major seral communities are included in the riparian/wetland classification scheme. See Boggs et al.(1990) and Hansen et al. (1989) for complete riparian and wetland classification scheme with habitat types defined for Montana.

21. Boggs, K., P. Hansen, R. Pfister, and J. Joy. 1990. Classification and management of riparian and wetland sites in northwestern Montana. Draft Version 1. Montana Riparian Association, Montana Forest and Conservation Experiment Station, University of Montana, Missoula, MT. 217 pp.

TOPICS: riparian classification, riparian plant communities, riparian soils, riparian management
COMMENTS: A key for identifying riparian site types, i.e., areas occupied or potentially occupied by a specific riparian association (plant community type representing the latest successional stage attainable on a specific hydrologic site). Community types which represent disclimax or seral communities that are stable for time frames relevant to land management decisions are described. Habitat types are described for specific communities. Soils, adjacent communities and management information is provided for each habitat type.

22. Bohn, C. 1989. Management of winter soil temperatures to control streambank erosion. p.69-71. In: R.E. Gresswell, B.A. Barton and J.L. Kershner (eds.), Riparian Resource Management, U.S. Department of the Interior, Bureau of Land Management. 193 pp.

TOPICS: streambank erosion, soil temperature, streambank vegetation
COMMENTS: Freeze-thaw cycles in soil are of greater magnitude without vegetation than with vegetation cover. Soil frost reduces soil strength. Hypothesizes that vegetation insulates the streambank soil and so may improve bank stability. Different vegetative cover affects freeze-thaw cycles and so may also affect bank stability.

23. Boring, K.K., L. Boring, T. Harris, and F. Cubbage. 1988. Section 404 Federal Wetlands Regulation: defining wetlands and corps jurisdiction. TOPS (spring 1988):18-21.

TOPICS: wetlands regulation
COMMENTS: Review of federal law that has evolved regarding the waters of the United States that fall under the 404 permit requirements administered by the COE (Corps of Engineers) and comparison of the scientific concept of wetlands with the current method of wetlands delineation employed by the COE.

24. Boule, M.E. 1988. Wetland creation and enhancement in the Pacific Northwest. p. 130-136. In: J. Zelazny and J.S. Feierabend (eds.). Increasing Our Wetland Resources. National Wildlife Federation Proceedings, Oct. 1987, Washington D.C.

TOPICS: wetlands creation, project management
COMMENTS: Management and assessment of a wetland creation project.

25. Braasch, S., and G.W. Tanner. 1989. Riparian zone inventory. Rangelands, 11(3):103-106.

TOPICS: riparian inventory, beaver
COMMENTS: Qualitative observations of beaver and grazing impacts, Pfankuch bank/channel stability evaluation and plant habitat classification of mountain stream riparian zones.

26. Brinson, M.M. 1980. Riparian and floodplain ecosystems: functions, values, and management. U.S. Department of the Interior, Fish and Wildlife Service, Biological Services Program, Eastern Energy and Land Use Team, Kearneysville, WV. 7 p.

TOPICS: riparian, floodplain management
COMMENTS: A synopsis of functions, values and management of riparian floodplain ecosystems.

27. Britton, C.M. and F.A. Sneva. 1979. Effects of haying and non-use on flood meadow vegetation. p.5-7. In: Research in Rangeland Management, Oregon State University, Agricultural Experiment Station, Special Report 549: Oregon State Univ., Corvallis, OR. 39 p.

TOPICS: management, meadow vegetation
COMMENTS: Comparison of herbage yield and plant species composition for hayed and adjacent uncut meadow areas. See Britton et al. (1980), referred to in the 1986 bibliography (Thomas and Wentzell, 1986), for subsequent results.

28. Brown, C.R. 1990. Avian use of native and exotic riparian habitats on the Snake River, Idaho. M.Sc. Thesis. Colorado State University, Fort Collins, CO. 60 pp.

TOPICS: wildlife habitat, bird communities, biological diversity
COMMENTS: Avian use in 5 riparian habitat types (willow, Russian olive, willow-Russian olive mix, river birch and hackberry) was inventoried during the winter and breeding seasons, 1989. Twenty-two species were observed during winter inventories and 36 species observed during the breeding season of which 21 species bred in the study area. Willow sites had higher species richness and density than the exotic Russian olive sites.

29. Burke, I.C., W.A. Reiners, and D.S. Schimel. 1989. Organic matter turnover in a sagebrush-steppe landscape. Biogeochemistry 7: 11-31.

TOPICS: soil processes
COMMENTS: Compares organic matter accumulation and N in surface soils of sagebrush steppe vegetation and in different micro-topographic positions.

30. Cale, W.G., G.M. Henebry, and J.A. Yeakley. 1989. Inferring process from pattern in natural communities. Can we understand what we see? BioScience 39(9):600-605.

TOPICS: ecosystem processes
COMMENTS: Thesis: predictions must derive from analysis of fundamental processes, not from analysis of biological patterns.

31. Carson, R.G. and J.M. Peek. 1987. Mule deer habitat selection patterns in northcentral Washington. J. Wildl. Manage. 51(1):46-51.

TOPICS: mule deer, wildlife habitat
COMMENTS: Mule deer (northcentral Washington) used the riparian cover type for thermal protection, security and browsing (Saskatoon serviceberry).

32. Chadwick, D.H. 1990. The biodiversity challenge. By linking protected habitats, America can aid the survival of nature's richness. Defenders Magazine Special Report, Defenders of Wildlife, Portland, OR. 14 p.

TOPICS: biological diversity, gap analysis, wildlife habitat
COMMENTS: The essay introduces concepts of island biogeography and applies these to wildlife survival on islands of natural habitat created by human conversion of landscapes. Wildlife conservation is discussed in terms of conservation of habitat types, the areal extent and continuity of habitats.

33. Chaney, E., W. Elmore, and W.S. Platts. 1990. Livestock grazing on western riparian areas. U.S. Environmental Protection Agency. 45 p.

TOPICS: grazing effects, riparian enhancement, management
COMMENTS: A glossy presentation with photographs addressing riparian functions, values and issues, documenting cases of successful riparian enhancement studies throughout the west.

34. Cheng, J.D. 1989. Streamflow changes after clear-cut logging of a pine beetle-infested watershed in southern British Columbia, Canada. Water Resources Research 25(3):449-456.

TOPICS: stream flow, logging effects
COMMENTS: In response to clear-cut logging over 30% of a watershed, annual and monthly water yields and annual peak flows increased, and annual peak flow and half flow volume occurrence dates arrived earlier than for pre-logging conditions and for a no-cut control watershed.

35. Ciliberti, V. 1990. Small scale placer mining on Bureau of Land Management (BLM) administered land. In: Montana Riparian Association. Management of Riparian and Wetland Forested Ecosystems in Montana: Fourth Annual Montana Riparian Association Workshop. 5-7 September, 1990 in Whitefish, MT: Montana Riparian Association, School of Forestry, University of Montana, Missoula, MT.

TOPICS: placer mining management
COMMENTS: In Montana, regulation of placer mining operations under 5 acres in area is achieved by negotiation with the operator. The BLM has few powers to compel compliance by operators. Water quality violation is a possible avenue for obtaining compliance (from author's abstract).

36. Clary, W.P. and D.E. Medin. 1990. Differences in vegetation biomass and structure due to cattle grazing in a northern Nevada riparian ecosystem. Res. Pap. INT-427. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Research Station. 8 p.

TOPICS: riparian plant communities, grazing effects, grazing exclosure
COMMENTS: The study area is on the West Fork of Deer Creek in northeastern Nevada. Plots are located within an 11-year grazing exclosure and on the adjacent grazed riparian zone. Cattle grazing effects were concentrated in the riparian, not in adjacent uplands. Positioning of the exclosure fence across the narrow Deer Creek canyon probably reduced cattle access to the unfenced riparian, resulting in similar aspen stands upstream of the exclosure and within the exclosure. Below the exclosure, grazing had a major impact on aspen regeneration and stand structure. Greatest vegetation biomass differences between the grazed and fenced areas occurred among graminoid species. Willow stands were extremely variable, masking biomass differences. There were no significant differences between sites for biomass of small shrubs, but large shrubs other than willow had significantly greater biomass in the grazed areas.

37. Clary, W.P. and B.F. Webster. 1989. Managing grazing of riparian areas in the Intermountain Region. Gen. Tech. Rep. INT-263. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Research Station. 11 p.

TOPICS: grazing management
COMMENTS: Riparian grazing management recommendations for planning and implementing riparian grazing on National Forest System lands in the Intermountain Region.

38. Clary, W.P., and B.F. Webster. 1990. Riparian grazing guidelines for the Intermountain Region. Rangelands 12:209-212.

TOPICS: grazing management
COMMENTS: Grazing practices which intend to reduce impacts on the herbaceous plant community, the woody plant community and streambank morphology are recommended. Criteria of minimum season-end stubble heights and an emphasis on early grazing are aimed at the maintenance of the woody plant community and streambank morphology.

39. Clifton, C. 1989. Effects of vegetation and landuse on channel morphology. p. 121-129. In: R.E. Gresswell, B.A. Barton and J.L. Kershner (eds.), Riparian Resource Management. An Educational Workshop. U.S. Department of Land Management. Billings, Montana. 193 pp.

TOPICS: hydrology, channel morphology, streambank vegetation
COMMENTS: Variability of channel morphology within a drainage is high and depends on factors such as vegetation, associated land uses, and organic debris. Increased channel roughness reduces erosional energy and promotes sedimentation. Vegetation-responsive channel parameters include channel width, wetted perimeter, channel shape.

40. Clifton, C. and A.E. Thomas. 1988. A bibliography of riparian and related topics with emphasis on the Intermountain West. Technical Bulletin 88-2. U.S. Department of the Interior, Bureau of Land Management, Idaho State Office, Boise, ID. 69 pp.

TOPICS: BLM, bibliography, riparian
COMMENTS: Lists recent publications up to 1988 (322 references) that address riparian topics. Copies of that bibliography in both booklet and diskette form are available from A.E. Thomas at the Idaho State Office, BLM.

41. Colby, B.G. 1990. Enhancing instream flow benefits in and era of water marketing. Water Resources Research 26(6):1113-1120.

TOPICS: water rights, instream flow, policy
COMMENTS: This article examines current instream flow policies in the western states and outlines the economic values generated by stream flows. The author argues that instream values are high enough to compete in the market for water rights with offstream uses when important recreation sites and wildlife species are involved. The paper suggests how western state policies might be altered to accommodate instream flow protection within the context of water marketing, with the objective of improving the efficiency of water allocation among instream and consumptive uses. (from author's abstract)

42. Compton, B.B., R.J. Mackie, and G.L. Desek. 1988. Factors influencing distribution of white-tailed deer in riparian habitats. Journal of Wildlife Management 52(3): 544-548.

TOPICS: white-tailed deer, wildlife habitat
COMMENTS: Evaluation of factors influencing distribution of white-tailed deer (*Odocoileus viginianus*) along the lower Yellowstone River in eastern Montana during winter, summer and fall, 1985. The amount of riparian forest and shrubland cover was the most important factor influencing deer distribution and accounted for 70% of the variation observed in relative deer abundance among sections of the river bottom. Cattle distribution and amount of island area also influenced the distribution of deer (from Abstract).

43. Cooperrider, A.Y. 1990. Conservation of biological diversity on western rangelands. In: Transactions of the North American Wildlife and Natural Resources Conference: 55th Annual Meeting, March 16-21, 1990, Denver, CO.: Wildlife Management Institute, Washington, D.C.

TOPICS: biological diversity, ecosystem processes
COMMENTS: Biological diversity - diversity at the community/habitat, species and genetic levels - is threatened by our activities on the western rangelands. The paper reviews programs that currently address these losses and recommends further research, expanded inventory taking and new programs that focus on semi-natural areas that surround preserves.

44. Corn, P.S., and R.B. Bury. 1989. Logging in western Oregon: responses of headwater habitats and stream amphibians. Forest Ecology and Management, 29:39-57.

TOPICS: riparian forest, amphibians, biological diversity
COMMENTS: Compared the occurrence and abundance of amphibians between streams flowing through uncut forests and streams in logged stands where second growth has reestablished the canopy. Pacific giant salamanders (*Dicampton ensatus*), Olympic salamanders (*Rhyacotriton olympicus*), Dunn's salamanders (*Plethodon dunni*), tailed frogs (*Ascaphus truei*).

45. Cornwell, J. 1990. Developing grazing management plans for riparian areas. Idaho Range News, April (1990), Soil Conservation Service (Boise).

TOPICS: grazing strategies
COMMENTS: Suggestions to managers for developing plans for management of riparian grazing (a generalized view).

46. Crance, J.H. 1988. Relationships between palustrine wetlands of forested riparian floodplains and fishery resources: a review. U.S. Fish Wildl. Serv. Biol. Rep. 88(32). 27 pp.

TOPICS: riparian forest, fishery, floodplain hydrology, ecosystem processes
COMMENTS: Palustrine wetlands of forested riparian floodplains were defined as freshwater wetlands that are coupled to upland watersheds and to adjacent streams. Hydrology, nutrient transport, productivity and fish species structure were reviewed.

47. Crisco, W. 1990. Riparian vegetation analysis with low altitude aerial photography. A case study report, BLM Vale District, Oregon. BLM Remote Sensing Section, Denver, CO.

TOPICS: riparian monitoring, aerial photography, BLM
COMMENTS: Infrared aerial photographs of 11 riparian sites were obtained during two periods, 1981-1982 and in 1987, at scales from 1:1,790 to 1:3,570. Vegetation and channel characteristics were characterized and acreages of each category determined. Significant vegetation changes were observed.

48. Cummins, K.W., M.A. Wilzbach, D.M. Gates, J.B. Perry and W.B. Taliaferro. 1989. Shredders and riparian vegetation. Bioscience 39(1):24-30.

TOPICS: stream invertebrates, riparian ecosystems, stream organic debris
COMMENTS: Synthesis of a conceptual model that links riparian litter with stream shredders which, as a group, convert large organic plant substrates such as leaf litter into smaller particles.

49. Davis, G.J. and M.M. Brinson. 1980. Responses of submersed vascular plant communities to environmental change: summary. U.S. Department of the Interior, Fish and Wildlife Service, Biological Services Program: FWS/OBS-80/42. 15 p.

TOPICS: aquatic plants, water quality
COMMENTS: Condensation of a more comprehensive, technical publication by the same authors entitled RESPONSES OF SUBMERSED VASCULAR PLANT COMMUNITIES TO ENVIRONMENTAL CHANGE, FWS/OBS-79/33. Environmental parameters include: light transmission, fluctuating water levels, wave action, sedimentation, nutrients, and seasonal effects. Potential impacts of various developmental activities are discussed briefly. (authors' abstract)

50. Davis, R.K. 1989. The benefits of riparian development: a report to TGS Technology Inc. on procedures for the economic evaluation of riparian protection projects of the U.S. Bureau of Land Management.

TOPICS: BLM, riparian management
COMMENTS: An economic analysis of riparian improvement projects.

51. De Meo, T.E., and W.D. Loggy. 1989. Development of wetlands mapping procedures for forest planning in southeast Alaska. p. 57-72. In: E.B. Alexander (ed.), Proceedings of Watershed '89: A Conference on the Stewardship of Soil, Air, and Water Resources. U.S. Department of Agriculture, Forest Service, Alaska Region, Juneau, AK. 215 pp.

TOPICS: wetland classification, geographical information system
COMMENT: Wetland boundaries were generated using a geographical information system (GIS), hydric soil information and wetland plant associations.

52. De Roo, A.P.J., L. Hazelhoff, and P.A. Burrough. 1989. Soil erosion modelling using 'ANSWERS' and geographical information systems. Earth Surface Processes and Landforms 14:517-532.

TOPICS: erosion models, soil erosion, geographical information system
COMMENTS: A model that simulates surface runoff and erosion was linked to a Geographical Information System. Model output is very sensitive to small changes of several input variables, such as infiltration, antecedent soil moisture, and soil roughness. Detailed information about rainfall intensities during an event is needed. Sensitivity and insufficient input data make the validation of ANSWERS difficult. (from abstract)

53. DeBano, L.F. and W.R. Hansen. 1989. Rehabilitating depleted riparian areas using channel structures. p. 141-148. In: R.E. Gresswell, B.A. Barton and J.L. Kershner (eds.), Riparian Resource Management. An Educational Workshop. U.S. Department of Land Management. Billings, Montana. 193 pp.

TOPICS: channel restoration, in-stream structures, riparian enhancement
COMMENTS: Case studies of watershed-riparian rehabilitation.

54. DeBano, L.F., and L. Schmidt. 1989a. Interrelationship between watershed condition and health of riparian areas in southwestern United States. p. 45-52. In: R.E. Gresswell, B.A. Barton and J.L. Kershner (eds.). Riparian Resource Management. An Educational Workshop. U.S. Department of the Interior, Bureau of Land Management. Billings, Montana. 193 p.

TOPICS: riparian management, watershed rehabilitation, riparian enhancement
COMMENTS: A review of relationships between the whole watershed and riparian zones with watershed management suggestions for improvement of the riparian.

55. DeBano, L.F., and L.J. Schmidt. 1989b. Improving southwestern riparian areas through watershed management. Gen. Tech. Rep. RM-182. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station. 33 pp.

TOPICS: watershed rehabilitation, riparian enhancement, soil erosion, in-stream structures, channel dynamics, streambank protection structures
COMMENTS: This paper reviews opportunities and watershed restoration techniques available for rehabilitating and enhancing riparian ecosystems in southwest environments. As such, it is intended to serve as a state-of-the-art report on riparian hydrology and improvement in both naturally occurring and man-made riparian areas throughout the Southwest (from Abstract).

56. DeLaune, R.D., W.H. Patrick, and S.R. Pezeshki. 1987. Forseeable flooding and death of coastal wetland forests. Environmental Conservation. 14(2):129-133.

TOPICS: soil, Cs^{137}
COMMENTS: Of interest is the technique of dating sediment layers in forest soils by measuring ^{137}Cs activity in soil. ^{137}Cs is a product of nuclear-weapon testing and does not occur naturally. Fallout levels first appeared in 1954 with peak levels occurring in 1963 and 1964.

57. Deusen, M.S., and P.W. Adams. 1989. Riparian areas: fish and wildlife havens. Woodland Fish and Wildlife Project, June 1989: World Forestry Center, Portland, OR. 7 p.

TOPICS: riparian ecosystems
COMMENTS: This publication tells how riparian areas provide essential fish and wildlife habitat, how land use can affect this habitat, and briefly describes management practices that protect or enhance the habitat (from Introduction). The publication is aimed to serve as a practical guide to woodland owners.

58. DeVelice, R.L. 1990. Potential effects of global climate change on riparian forests. In: Montana Riparian Association. Management of Riparian and Wetland Forested Ecosystems in Montana: Fourth Annual Montana Riparian Association Workshop. 5-7 September, 1990 in Whitefish, MT: Montana Riparian Association, School of Forestry, University of Montana, Missoula, MT.

TOPICS: global warming effects, wildlife habitat
COMMENTS: Abstract of a spoken presentation. Recommends broad-scale monitoring for early detection of ecosystem change in response to global warming, establishment of migration corridors to enable species movement to favorable environments, and natural areas designation to attempt to maximize landscape diversity so that suitable habitats will remain available for most species.

59. Dickson, J.G. and J. Howard. 1989. Small mammals in streamside management zones in pine plantations. p. 375-378. In: Management of Amphibians, Reptiles, and Small Mammals in North America. Proceedings of the symposium, July 19-21, 1988, Flagstaff, AZ: Gen. Tech. Rep. RM-166. U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station, Fort Collins, CO.

TOPICS: small mammals, streamside management zones, riparian forest
COMMENTS: The study quantified captures of small mammals in mature hardwood or pine-hardwood strips along streams that flow through pine plantations in Texas. More small mammals were captured in the narrow streamside management zones (tree canopy absent and dense brushy vegetation) than in medium or wide zones.

60. Dieter, C.D., and T.R. McCabe. 1989. Habitat use by beaver along the Big Sioux River in eastern South Dakota. p. 135-140. In: R.E. Gresswell, B.A. Barton and J.L. Kershner (eds.). Riparian Resource Management. An Educational Workshop. U.S. Department of the Interior, Bureau of Land Management. Billings, Montana. 193 p.

TOPICS: beaver
COMMENTS: Species and diameter of trees evaluated for grazed and ungrazed riparian areas utilized by beaver. Ungrazed, beaver-utilized areas were dominated by many young trees with small DBH, < 7.5 cm, many stems the result of sprouting. In such areas, beaver cut selectively, choosing trees near to the stream and favoring particular

species. There was apparently less beaver damage in the grazed areas, because of lesser availability of small-diameter trees close to streams. No evidence that beaver degraded the ungrazed areas, despite the greater evidence of damage to trees.

61. Dobyns, H.F. 1989. Historical Perspective. A workshop presentation: Practical approaches to riparian resource management. An educational workshop. D'Arcy McNickle Center for the History of the American Indian, The Newberry Library, Chicago. IL.

TOPICS: riparian, historical riparian uses
COMMENTS: A history of use of riparian resources in North America from paleoindian times (8000 BC) to present. Thesis is that riparian "management" by human communities occurs only within the priorities for selective riparian resource use defined by the social structure.

62. Douglas, A.J. 1989. Annotated bibliography of economic literature on wetlands. U.S. Fish Wildl. Serv. Biol. Rep. 89(19). 67pp.

TOPICS: bibliography, economics of wetland protection
COMMENTS: Annotated bibliography of recent, post-1965, economic literature on wetlands.

63. Dusek, G.L. 1990. Use of riparian areas in Montana by white-tailed deer. In: Montana Riparian Association. Management of riparian and wetland forested ecosystems in Montana: Fourth Annual Montana Riparian Association Workshop. 5-7 September, 1990, in Whitefish, MT: Montana Riparian Association, School of Forestry, University of Montana, Missoula, MT.

TOPICS: white-tailed deer, wildlife habitat
COMMENTS: In eastern Montana hardwood draws containing green ash and adjacent prairies are an important habitat type for white-tailed deer, particularly when interspersed with croplands. Highest deer density is along the river bottoms.

64. Eicher, A.L. 1988. Soil-plant correlations in wetlands and adjacent uplands of the San Francisco Bay estuary, California. U.S. Fish Wildl. Serv. Biol. Rep. 88 (21). 35 pp.

TOPICS: riparian classification, riparian soils, riparian plant communities
COMMENTS: The study tests a system for delineating wetlands by correlation of vegetation indices with soil types. Each plant was assigned a wetland indicator number, based on prepared plant lists or a provisional number for species not previously listed for the area. Vegetation indices included the wetland indicator and either the plant density or percent cover.

65. Filip, G.M., L.D. Bryant, and C.A. Parks. 1989. Mass movement of river ice causes severe tree wounds along the Grande Ronde River in northeastern Oregon. Northwest Science 63(5):211-213.

TOPICS: river ice, streambank vegetation
COMMENTS: Lateral movement of river ice across the floodplain caused large wounds on tree stems (mountain alder) and direct mortality of shrubs or indirect mortality through wounding and subsequent infection by canker fungi. The ages of wounds indicated a 20 to 30 year period between events of lateral ice movement across the floodplain.

66. Finch, D.M. 1988. Bird-habitat relationships in subalpine riparian shrublands of the central Rocky Mountains. p. 167-172. In: C.A. Troendle, M.R. Kaufmann, R.H. Hamre (tech. coords.). Management of Subalpine Forests: Building on 50 Years of Research. U.S. Department of Agriculture, Forest Service, Gen. Tech. Rep. RM-149.

TOPICS: bird communities, biological diversity, wildlife habitat
COMMENTS: Examined associations between bird abundance, habitat structure measured at random sites, and habitat measured at bird locations in subalpine riparian shrublands. The subalpine riparian avifaunas were depauperate with only four abundant species-- song sparrow, white-crowned sparrow, Lincoln's sparrow and Wilson's warbler. Habitat requirements overlapped among these species but differed significantly from randomly-sampled habitat in the same areas. Results indicated that species preferred densely-foliated ground and shrub layers, and higher effective vegetation height (from abstract).

67. Finch, D.M. 1989. Habitat use and habitat overlap of riparian birds in three elevational zones. Ecology 70(4): 866-880.

TOPICS: riparian ecosystems, bird communities, biological diversity, riparian habitat
COMMENTS: The low elevation riparian habitat provides a broader more complex resource base than higher elevation riparian habitats. Over all sites, zone-independent bird species were generalists and zone-dependent species were more often habitat specialists. On a site-by-site basis, however, some high elevation specialists were generalists for their sites, and some zone generalists were in fact specialists within a particular site. Avifauna diversity in western and Rocky Mountains riparian sites is not saturated, indicating that the Great Plains region still offers a barrier to western dispersal.

68. Floyd, D., P. Ogden, B. Roundy, G. Ruyle, and D. Stewart. 1988. Improving riparian habitats. Rangelands 10(3):132-134.

TOPICS: grazing strategies, riparian enhancement, southwestern desert streams
COMMENTS: Briefly describes two Arizona grazing allotments where the author claims that rotational grazing and sensitivity to the riparian habitat values has resulted in greatly enhanced riparian habitats.

69. Foote, A.L. 1988. Effects of wave energy on plant establishment in shallow lacustrine wetlands. p. 115-119. In: Mutz, K.M., D.J. Cooper, M.L. Scott and L.K. Miller (eds.). Restoration, Creation, and Management of Wetland and Riparian Ecosystems in the American West. Symposium, Nov. 14-16, 1988, Denver CO: Rocky Mountain Chapter of the Society of Wetland Scientists, Denver CO. 239 pp.

TOPICS: lacustrine sediment transport, emergent wetland plants, seed bank
COMMENTS: Studies address affects of wave action on sediment resuspension, seed bank redistribution and survival of tubers in shallow wave-washed wetlands.

70. Fox, J.D. 1989. Simulating vegetation-water yield relations in interior Alaska. p. 179-189. In: E.B. Alexander (ed.), Proceedings of Watershed '89: A Conference on the Stewardship of Soil, Air, and Water Resources. U.S. Department of Agriculture, Forest Service, Alaska Region, Juneau, AK. 215 pp.

TOPICS: watershed hydrology, watershed models
COMMENTS: A model for predicting spring runoff in cold climates. The model incorporates interactions among snowmelt and soil infiltration capacity. The former is affected by all factors influencing the snowpack energy balance and the latter is affected by soil texture, autumn soil moisture, snowpack depth and air temperature, all of which determine soil freezing and thawing. The study hypothesized that runoff will increase after timber harvest, not only due to increased snowmelt rates and decreased transpiration, but also due to fall soil moisture and subsequent formation of concrete frost (from the abstract).

71. Gebhardt, K.A., C. Bohn, S. Jensen, and W.S. Platts. 1989. Use of hydrology in riparian classification. p. 53-59. In: R.E. Gresswell, B.A. Barton, and J.L. Kershner (eds.), Riparian Resource Management, U.S. Department of the Interior, Bureau of Land Management. 193 pp.

TOPICS: riparian classification, hydrology
COMMENTS: Presents a general classification scheme for riparian zones based on hydrologic and geomorphic features. Recognising the dynamic nature of the riparian, a concept of 'state' is introduced as a unit of classification to indicate the responses of a site type to physical impacts. Physical processes that affect soil water regime and erosion resistance can effect 'state' changes. The relative vulnerability and resilience of riparian vegetation may be described in terms of the 'state' of the riparian and the

physical processes occurring within.

72. Gebhardt, K.A., J. Gebhardt, G. Koonce, B. O'Brien, S. Sweet, and R.B. Tiedmann. 1988. Creating wildlife and wetland amenities in an urban environment. p. 157-161. In: Mutz, K.M., D.J. Cooper, M.L. Scott and L.K. Miller (eds.). Restoration, Creation, and Management of Wetland and Riparian Ecosystems in the American West. Symposium, Nov. 14-16, 1988, Denver CO: Rocky Mountain Chapter of the Society of Wetland Scientists, Denver CO. 239 pp.

TOPICS: riparian creation, mitigation
COMMENTS: Description of wetland-wildlife habitat creation in association with an urban housing project.

73. Genter, D.L. 1990. The role of riparian habitat in maintaining rare and endangered species. In: Montana Riparian Association. Management of Riparian and Wetland Forested Ecosystems in Montana: Fourth Annual Montana Riparian Association Workshop. 5-7 September, 1990 in Whitefish, MT: Montana Riparian Association, School of Forestry, University of Montana, Missoula, MT.

TOPICS: biological diversity, riparian
COMMENTS: Abstract of spoken presentation. Summarizes numbers of animal species dependent on or heavily dependent on riparian habitats in Montana.

74. Goldner, B.H. 198?. Riparian restoration efforts associated with structurally modified flood control channels. ???? In: California Riparian Systems. Sept. 1981, Davis, CA.

TOPICS: riparian restoration, planting
COMMENTS: Methods used to vegetate flood control channels. Discussed were plant species selection, planting, irrigation and maintainance.

75. Grant, G. 1986. Assessing effects of peak flow increases on stream channels: a rational approach. p. 142-149. In: Proceedings of the California Watershed Management Conference, November 18-20, 1986, West Sacramento, CA.: (citation incomplete: Author's address: Pacific Northwest Research Station, Forest Service, U.S. Department of Agriculture, Corvallis, OR)

TOPICS: watershed, cumulative effects, streamflow
COMMENTS: Criticizes employment of arbitrary limits to the basin drainage area affected by forestry activities. Recommends a procedure using the magnitude of flow increases that can be accommodated by downstream channels before channel instability occurs to determine the upper limit for basin area compaction. Discusses the physical factors which affect channel stability and ways to determine this component of the cumulative watershed effects of forest practices.

76. Grant, G. 1988. The RAPID technique: a new method for evaluating downstream effects of forest practices on riparian zones. Gen. Tech. Rep. PNW-GTR-220. Portland, OR. U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 36p.

TOPICS: riparian inventory, aerial photography, channel adjustments
COMMENTS: The RAPID technique (riparian aerial photographic inventory of disturbance), uses aerial photographs to evaluate changes in channel conditions through time and links such changes with their possible stream causes.

77. Green, D.M. and J.B. Kauffman. 1989. Nutrient cycling at the land-water interface: the importance of the riparian zone. p. 61-68. *In:* R.E. Gresswell, B.A. Barton and J.L. Kershner (eds.). Riparian Resource Management. U.S. Department of the Interior, Bureau of Land Management. Billings, Montana.

TOPICS: saturated soils, soil redox
COMMENTS: Sedge and grass colonization of the riparian varies as redox potential of the surface soil. Subsurface flow of aerated water produces more oxidized conditions at depth than in the surface above the water table.

78. Gresswell, R.E., B.A. Barton and J.L. Kershner (eds.). 1989. Riparian Resource Management. An Educational Workshop. U.S. Department of the Interior, Bureau of Land Management. Billings, Montana. 193 p.

TOPICS: symposium, riparian management, hydrology, grazing effects
COMMENTS: Symposium papers and extended abstracts on topics relating to riparian management. Some individual titles are included in this bibliography.

79. Griggs, J. 1990. Trout in small woodland areas. Woodland Fish and Wildlife Project, August 1990: World Forestry Center, Portland, OR.

TOPICS: salmonid habitat
COMMENTS: Information bulletin for small-area land owners interested in stocking farm ponds with trout.

80. Gutzwiller, K.J. and S.H. Anderson. 1987. Multiscale associations between cavity-nesting birds and features of Wyoming streamside woodlands. The Condor 89:534-548.

TOPICS: bird communities, wildlife habitat
COMMENTS: Riparian habitat use by cavity-nesting birds was studied at 3 scales: (1) nest trees, (2) nest sites (vegetation surrounding nest trees), and (3) disjunct fragments (0.1 to 32.3 ha) of floodplain forest. Features of Wyoming streamside woodlands on all three spatial scales influence habitat use and are important in structuring communities of cavity-nesting birds. Some patterns of habitat use on the scales of nest trees and habitat fragments were not predictable from habitat associations observed elsewhere for the same

species. Bird-habitat relations on one scale were (or were not) predictable from relations on other scales, depending on the species.

81. Hall, F.C. 1985. Management practices and options. In: J.W. Thomas and C. Maser (eds.), Wildlife habitats in managed rangelands– the Great Basin of southeastern Oregon. U.S. Department of Agriculture, Forest Service, Gen. Tech. Rep. PNW-189. Pacific and Northwest Forest and Range Experiment Station, Portland, OR. 17 p.

TOPICS: wildlife habitat, grazing
COMMENTS: Deals primarily with livestock management in relation to wildlife and wildlife habitat. Included are discussions of ecological status (range condition), livestock management, multiple-use options for each species featured in previous chapters (trout, sage grouse, pronghorn, mule deer, and bighorn sheep). Concludes with a discussion of diversity (from abstract).

82. Hancock, J.L. 1989. Selling a successful riparian management program. A public land managers viewpoint. p. 1-9. In: R.E. Gresswell, B.A. Barton and J.L. Kershner (eds.). Riparian Resource Management. An Educational Workshop. U.S. Department of the Interior, Bureau of Land Management. Billings, Montana. 193 p.

TOPICS: riparian management
COMMENTS: Goals of a successful riparian management program: identify and demonstrate the benefits of good riparian management; create a motivated group of landusers and managers to set goals; monitor progress.

83. Hansen, P.L. 1990a. Alternative approaches for inventory and mapping of riparian and wetland areas. In: Montana Riparian Association. Management of Riparian and Wetland Forested Ecosystems in Montana: Fourth Annual Montana Riparian Association Workshop. 5-7 September, 1990 in Whitefish, MT: Montana Riparian Association, School of Forestry, University of Montana, Missoula, MT.

TOPICS: riparian inventory
COMMENTS: A brief summary of planning vegetation mapping projects.

84. Hansen, P.L. 1990b. The development of a site classification with management information for riparian and wetland areas - its applicability and use. In: Montana Riparian Association. Management of Riparian and Wetland Forested Ecosystems in Montana: Fourth Annual Montana Riparian Association Workshop. 5-7 September, 1990 in Whitefish, MT: Montana Riparian Association, School of Forestry, University of Montana, Missoula, MT.

TOPICS: riparian classification
COMMENTS: Summarizes the classification scheme developed for riparian and wetland areas in Montana by the Montana Riparian Association. Suggests ways in which the habitat-type classification can be applied. See Boggs et al.(1990) and Hansen et al.

(1989) for complete riparian and wetland classification scheme with habitat types defined for Montana.

85. Hansen, P.L., S.W. Chadde and R.D. Pfister. 1987. Riverine wetlands of southwestern Montana. Montana Riparian Association, School of Forestry, University of Montana, Missoula, MT. 39 p.

TOPICS: riparian inventory, riparian plant communities
COMMENTS: The study describes dominant plant species and major riparian dominance types occurring along major rivers of southwestern and west central Montana.

86. Hansen, P., R. Pfister, J. Joy, D. Svoboda, K. Boggs, L. Myers, S. Chadde, and J. Pierce. 1989. Classification and management of riparian sites in southwestern Montana. Draft version 2. Montana Riparian Association, School of Forestry, Univ. Montana, Missoula, MT.

TOPICS: riparian classification, riparian soils, riparian plant communities, riparian management
COMMENTS: A key for identifying **riparian site types**, i.e., areas occupied or potentially occupied by a specific **riparian association** (plant community type representing the latest successional stage attainable on a specific hydrologic site). Community types which represent disclimax or seral communities that are stable for time frames relevant to land management decisions are described. **Habitat types** are described for specific communities. The classification system was developed from 1071 riparian sample plots. Soils, adjacent communities and management information is provided for each habitat type.

87. Heede, B.H., M.D. Harvey, and J.R. Laird. 1988. Sediment delivery linkages in a chaparral watershed following a wildfire. Environmental Management 12(3):349-358.

TOPICS: watershed erosion, sediment transport, wildfire
COMMENTS: Temporal and spatial sediment delivery to and within the stream network following a wildfire on a chaparral watershed in Arizona, U.S.A., was studied. Methods included interpretation of channel processes (aggradation, degradation) from sequential aerial photographs, field measurements of sediment delivery, and overland flow from ten microwatersheds having different vegetation cover (erosion pavement-no vegetation, erosion pavement with vegetation buffer strips, open chaparral cover). The watershed/stream response to fire was complex. The bulk of the sediment was stored in colluvial deposits before the 1959 fire, was eroded from hillslopes into the channels immediately following the fire, and was still not exported from the basin 33 years after the fire. Relatively rapid vegetation recovery led to the reestablishment of chaparral buffer strips on most channel banks. The vegetation strips greatly reduced sediment delivery from the hillslopes to the channels.

88. Higgins, D.A., S.B. Maloney, A.R. Tiedemann, and T.M. Quigley. 1989. Storm runoff characteristics of grazed watersheds in eastern Oregon. Water Resources Bulletin, 25:87-100.

TOPICS: watershed hydrology, stormflow, grazing effects
COMMENTS: Quantified storm flow responses to summer convective storms, producing single-peak hydrographs, for forested and meadow watersheds subject to low-to-moderate degrees of grazing in the Blue Mountains, eastern Oregon.

89. Higgins, D.A., A.R. Tiedemann, T.M. Quigley, D.B. Marx. 1989. Streamflow characteristics of small watersheds in the Blue Mountains of Oregon. Water Resources Bulletin 25(6):1131-1149.

TOPICS: watershed hydrology
COMMENTS: Streamflow data for water years 1978-84 were evaluated to identify streamflow characteristics for 13 small watersheds (0.46-7.00 mi^2) in the Blue Mountains of eastern Oregon and to determine differences among grazing intensities and vegetation types. Two classes of vegetation were evaluated: (1) western larch-Douglas-fir (nine watersheds) and (2) other (four watersheds representing fir-spruce, lodgepole pine, ponderosa pine, and mountain meadow.

90. Hogan, D.L. 1989. Channel response to mass wasting in the Queen Charlotte Islands, British Columbia: Temporal and spatial changes in stream morphology. p. 125-142. In: E.B. Alexander (ed.), Proceedings of Watershed '89: A Conference on the Stewardship of Soil, Air, and Water Resources. U.S. Department of Agriculture, Forest Service, Alaska Region, Juneau, AK. 215 pp.

TOPICS: riparian forest, woody debris, channel morphology
COMMENTS: Debris jams cause sedimentological, morphological and hydraulic changes upstream and downstream. The effects of these are described morphologically, temporally and spatially.

91. House, R., and V. Crispin. 1990. Economic analyses of the value of large debris as salmonid habitat in coastal Oregon streams. Technical Note, OR-7-6512. Portland OR: U.S. Department of the Interior, Bureau of Land Management, Oregon State Office, Portland OR. 11 p.

TOPICS: in-stream structures, salmonid habitat, riparian forest, riparian management
COMMENTS: Management scenarios which involved stream rehabilitation with large woody debris additions and rehabilitation combined with conifer harvest from the riparian zone showed greater short-term fishery benefits than leaving a stream under a low debris loading level. However, the best long-term economic alternative to maintain salmonid productivity in coastal streams is through maintainance of mature coniferous riparian zones under continuous high debris loading (from Abstract).

92. Hunter, B.A., M.S. Johnson, and D.J. Thompson. 1989. Ecotoxicology of copper and cadmium in a contaminated grassland ecosystem. IV. Tissue distribution and age accumulation in small mammals. Journal of Applied Ecology 26:89-99.

TOPICS: small mammals, metal contamination
COMMENTS: In order to assess the potential toxicological significance of accumulated metals in wild small mammals, both the tissue distribution and dynamics of age accumulation of metals in populations of animals from contaminated environments were established. This paper examines both these issues in small mammals inhabitating grasslands contaminated by metal refinery emissions. (from authors' introduction; study located in Great Britain) Species examined: common shrew (*Sorex araneus L.*), field vole (*Microtus agrestis L.*), wood mouse (*Apodemus sysvaticus L.)*

93. Interagency Wetlands Coordinating Body. 1989. Wise use and protection of federally managed wetlands: the federal land management agency role. Workshop proceedings, October 18-20, 1989, Harpers Ferry, WV.

TOPICS: wetland management
COMMENTS: Nine federal agencies participated in a workshop concerning policy, coordination and cooperation on wetland land management issues. This somewhat preliminary report of the results of the workshop includes materials presented by each of the agencies and point-form summaries of discussions.

94. Isabelle, P.S., L.J. Fooks, and P.A. Keddy. 1987. Effects of roadside snowmelt on wetland vegetation: an experimental study. Journal of Environmental Management 25:57-60.

TOPICS: water quality
COMMENTS: Contaminants in roadside snowmelt may have toxic effects on individual species and affect community structure of roadside wetlands. De-icing agents are of particular concern.

95. Ischinger, L.S., and K. Schneller-McDonald. 1988. Wetland restoration and creation in the west: what do we really know? p. 29-42. In: Mutz, K.M., D.J. Cooper, M.L. Scott and L.K. Miller (eds.). Restoration, Creation, and Management of Wetland and Riparian Ecosystems in the American West. Symposium, Nov. 14-16, 1988, Denver CO: Rocky Mountain Chapter of the Society of Wetland Scientists, Denver CO. 239 pp.

TOPICS: bibliography, wetland restoration, wetland creation, lacustrine, riparian
COMMENTS: Analysis of articles collected and documented in the U.S. Fish and Wildlife Service wetland creation/restoration data base. Of 1000 records in the data base, 79 deal with non-coastal freshwater wetlands in the west. Of the 79 records, 30 are concerned with the restoration of riparian areas, and 34 cite the creation or restoration of fish or wildlife habitat as a major objective. The availability of quality data from baseline studies, qualitative or quantitative measurements of wetland functions, and

monitoring efforts are discussed. Research needs are addressed.

96. Jackson, S.G., and J.A. Kadlec. 1988. Recent flooding of wetlands around Great Salt Lake, Utah. p. 120-125. In: Mutz, K.M., D.J. Cooper, M.L. Scott and L.K. Miller (eds.). Restoration, Creation, and Management of Wetland and Riparian Ecosystems in the American West. Symposium, Nov. 14-16, 1988, Denver CO: Rocky Mountain Chapter of the Society of Wetland Scientists, Denver CO. 239 pp.

TOPICS: lacustrine wetlands
COMMENTS: Discusses affects of temporary water-level rise in the Great Salt Lake on salt marshes.

97. Jackson, W., T. Martinez, P. Cuplin, W.L. Minckley, B. Shelby, P. Summers, D. McGlothlin, B. Van Haveren. 1988. Assessment of water conditions and management opportunities in support of riparian values: BLM San Pedro River Properties, Arizona. Proj. Compl. Rep. 88/004+7200. U.S. Department of the Interior, Bureau of Land Management, Service Center, Denver, CO. 180 pp.

TOPICS: BLM, groundwater, riparian vegetation, geomorphology, water rights
COMMENTS: Presents information on the condition of water resources and the riparian vegetation in the San Pedro River Management Area. Justifies the quantification of instream-dependent uses identified in the area and examines and recommends strategies for protecting or enhancing the water-related values.

98. Jatnieks-Straumanis, S.A., and L.E. Foote. 1988. Wetland mitigation banking: how it works in Minnesota. Rangelands 10:120-123.

TOPICS: wetland mitigation banking
COMMENTS: Short review of Minnesota Dept. of Transport experiences with mitigation banking.

99. Jenkins, K.J., and R.G. Wright. 1987. Simulating succession of riparian spruce forests and white-tailed deer carrying capacity in northwestern Montana. West. J. Appl. For. 2(3): 80-83.

TOPICS: riparian forest, population models, white-tailed deer
COMMENTS: Successional modelling demonstrated the effects of two timber harvesting strategies on white-tailed deer populations. Simulated populations declined following two timber harvesting schedules, but recovered after cessation of harvest. Gradual but continuing decline was predicted by alteration of the hydrologic regime of the river resulting in increased runoff and erosion.

100. Johnson, K.L., C. Moseley, J.C. Moseley, and J. O'Laughlin. 1990. BLM riparian policy in Idaho: analysis of public comment on a proposed policy statement. Report No. 2, Idaho Forest, Wildlife and Range Policy Analysis Group, June 1990. Idaho Forest, Wildlife and Range Experiment Station, University of Idaho, Moscow ID. 28 p.

TOPICS: BLM, riparian policy evaluation
COMMENTS: Analysis of public comment on the proposed BLM riparian policy for Idaho.

101. Johnson, S.R. 1990. Protecting riparian values during timber harvest and related activities: Kootenai National Forest experience. In: Montana Riparian Association. Management of Riparian and Wetland Forested Ecosystems in Montana: Fourth Annual Montana Riparian Association Workshop. 5-7 September, 1990 in Whitefish, MT: Montana Riparian Association, School of Forestry, University of Montana, Missoula, MT.

TOPICS: riparian forest, woody debris, SMZ, streamside management zone
COMMENTS: In the Kootenai National Forest, northwestern Montana, large woody debris is a particularly important factor in determining the physical and biological characteristics of small and intermediate-sized streams. A task force effort to address inadequacies in the national forest plan regarding timber harvests in forested riparian zones is discussed. Includes stream classification and management recommendations for streamside management zones (SMZ).

102. Jones, K.B. 1988. Comparison of herpetofaunas of a natural and altered riparian ecosystem. p.222-227. In: Management of Amphibians, Reptiles, and Small Mammals in North America. Proceedings of a symposium, July 19-21, 1988, Flagstaff, AZ.

TOPICS: reptiles, amphibians, biological diversity, wildlife habitat
COMMENTS: Reptile abundance and diversity were greater on an unaltered riparian ecosystem than on an altered site. Two streams; one having no major water impoundments and the sampling site located in a mature gallery-type stand of cottonwood and willow (unaltered), the other river having major impoundments, regulated flow, reduced flooding and the sample site located in a poorly developed tree gallery with no evidence of tree reproduction (altered). The distribution and abundance of certain microhabitats appear to account for differences in reptile abundance and diversity on the two sites. In conserving riparian ecosystems, attention needs to be given to protecting more habitat components, including microhabitats such as surface litter found important to herpetofauna.

103. Keigley, R.B. 1988. Developing methods of restoring vegetation communities while preserving genetic integrity. In: Proceedings of the High Altitude Revegetation Workshop No. 8: Colorado State University, Fort Collins, CO: Colorado Water Resources Research Institute, 1988, Information Series no.59.

TOPICS: biological diversity, revegetation
COMMENTS: An applied paper outlining concepts and methods used in revegetating steep slopes to produce a target plant community that reflects local genetic integrity.

104. Kenna, J., W. Devaurs, D. Troutman, G. King, W. Street, B. Cannon, D. Simontacchi, and V. Modrell. 1990. Warner Wetlands area of critical environmental concern (ACEC) management plan. U.S. Department of the Interior, Bureau of Land Management, Lakeview, OR. BLM-OR-PT-90-28-1792.

TOPICS: BLM, grazing, lacustrine management, meadow
COMMENTS: A BLM management plan for Warner Wetlands, ACEC, OR.

105. Kindschy, R.R. 1989. Regrowth of willow following simulated beaver cutting. Wildlife Society Bulletin 17:290-294.

TOPICS: simulated beaver herbivory, willow
COMMENTS: Measured the responses of willow to cutting treatments that simulated beaver herbivory during different seasons. Red willow (*Salix lasiandra*) is the most susceptible to cutting during hot summers conditions.

106. King, J.G. 1989. Streamflow responses to road building and harvesting: a comparison with the equivalent clearcut area procedure. Res. Pap. INT-401. U.S. Department of Agriculture, Forest Service, Intermountain Research Station. 13 p.

TOPICS: hydrology, stream flow, logging effects
COMMENTS: Increases in annual streamflow and peak streamflows were determined on four small watersheds following timber harvesting and road building. The measured hydrologic changes are compared to those predicted by a methodology commonly used in the Forest Service's Northern Region, the equivalent clearcut area procedure. Increases in peak streamflows are discussed with respect to their potential to modify the channel system.

107. Kirby, R.E., S.J. Lewis, and T.N. Sexson. 1988. Fire in North American wetland ecosystems and fire-wildlife relations: an annotated bibliography. U.S. Fish Wildl. Serv., Biol. Rep. 88(1), 146 pp.

TOPICS: bibliography, wetlands, fire effects

108. Knopf, F.L. 1986. Changing landscapes and the cosmopolitism of the eastern Colorado avifauna. Wildlife Society Bulletin 14:132-142.

TOPICS: biological diversity, bird communities, floodplain forests
COMMENTS: The development of a riparian forest on the Great Plains has provided a corridor for the movement of forest birds across those grasslands that have historically served as an ecological barrier to dispersal. The corridor has resulted in secondary contact of many congeneric species which currently hybridize on the Great Plains; the hybridization may be interpreted either as reversing 10,000 years of speciation, or alternatively as promoting hybrid vigor within populations. Natural resource management agencies need to develop formal positions on the issues of cosmopolitism and hybridization of wildlife species which occur with broad changes in native landscapes. (from authors summary)

109. Knopf, F.L., R.R. Johnson, T. Rich, F.B. Samson, and R.C. Szaro. 1988. Conservation of riparian ecosystems in the United States. Wilson Bull. 100(2): 272-284.

TOPICS: biological diversity, riparian ecosystems, bird communities, riparian conservation policy
COMMENTS: Avian diversity on a continental scale, particularly the western North American region, is jeopardized by the decline of riparian ecosystems. The authors summarize the positions or non-positions of public agencies in regards to riparian management and recommend government-wide changes. Their recommendations reflect the importance of riparian ecosystems relative to surrounding uplands as wildlife habitats throughout the west and indicate the need for co-ordinated management of geographic regions and habitat corridors for dispersal of avian species.

110. Knopf, F.L., J.A. Sedgwick and R.W. Cannon. 1988. Guild structure of a riparian avifauna relative to seasonal cattle grazing. J. Wildl. Manage. 52(2):280-290.

TOPICS: bird communities, grazing effects, biological diversity
COMMENTS: Avian guilds have been proposed as an approach to evaluating impacts of land-management programs on public lands. It has been recommended that guild delineations based on functional and structural criteria, should be replaced by guilds based on similarities among species' responses to a given perturbation. The present study provided information on the response of summer birds to grazing of a shrub-willow vegetation at Arapaho NWR. Three response guilds were delineated: (a) eurytopic, habitat generalists, (b) stenotopic, habitat specialists, and (c) mesotopic, intermediate habitat specialists. Authors hypothesized that the response-guild structure primarily reflects the impact of cattle upon the horizontal patterning of the vegetative community.

111. Kozel, S.J., W.A. Hubert, and M.G. Parsons. 1989. Habitat features and trout abundance relative to gradient in some Wyoming streams. Northwest Science 63(4):175-182.

TOPICS: salmonid habitat, channel gradient
COMMENTS: Low-gradient reaches (0.1-1.4%) were found to have deeper nearshore water depths, more undercut banks, and more trench pools than moderate-gradient reaches (1.5-4.0%), while moderate-gradient reaches had more cobble substrate, dammed pools formed by woody debris, and plunge pools. The mean standing stock of trout was 267 kg/ha in low gradient reaches and 102 kg/ha in moderate-gradient reaches. Habitat features correlated with trout standing stocks differed between the two gradient classes. (from authors' abstract)

112. Krasny, M.E., K.A. Vogt, and J.C. Zasada. 1988. Establishment of four Salicaceae species on river bars in interior Alaska. Holarctic Ecology 11:210-219.

TOPICS: river bar vegetation, willow, riparian plant communities
COMMENTS: In general, seed germination was not useful in explaining the patterns of plant distribution on river bar site. Vegetative reproduction can be important in both initial establishment and survival on river bar sites. Seed reproduction was important on mesic sites and vegetative reproduction was important on sites favorable to seed germination. Once established on mesic sites, however, expansion does not take place by root sprouting.

113. Kulla, A. 1990. Transitional forest grazing and compatible grazing systems for forested riparian and wetland sites in western Montana. In: Montana Riparian Association. Management of Riparian and Wetland Forested Ecosystems in Montana: Fourth Annual Montana Riparian Association Workshop. 5-7 September, 1990 in Whitefish, MT: Montana Riparian Association, School of Forestry, University of Montana, Missoula, MT.

TOPICS: grazing strategies, riparian forest
COMMENTS: All riparian compatible systems proposed to date have in common the prescription of less total grazing in the riparian area 'either through rest, season adjustment, number adjustment, livestock management, or structural improvement'. Whether the allotment can handle the same or increased stocking will depend on the availability and condition of the non-riparian upland areas.

114. LaFayette, R.A. and D.W. Paweleck. 1990. New revetment design controls streambank erosion. U.S. Forest Service, Engineering Field Notes, 22(July-Aug):23-31.

TOPICS: streambank stabilization, streambank erosion, riparian restoration
COMMENTS: Describes successful use of porous-fence revetment to prevent streambank failures on a deeply entrenched stream.

115. LaGrange, T.G. and J.J. Dinsmore. 1989. Plant and animal community responses to restored Iowa wetlands. Prairie Naturalist 21(1):39-48.

TOPICS: wetland restoration
COMMENTS: This study demonstrates that a high-quality wetland, with a plant and animal community very similar to unaltered Iowa wetlands, can be restored by removing or blocking tile lines. This is and easy and cost-effective way to restore wetland complexes where there are none or to add wetlands to an existing wetland complex. (from authors' abstract)

116. Lane, L.J., A.D. Nicks, J.M. Laflen, M.A. Weltz, W.J. Rawls, and D.I. Page. 1989. The water erosion prediction project: model overview. p.487-494. In: Proceedings of National Water Conference, IR and WR Divisions of the American Society of Civil Engineers. Newark, DE, July 17-20, 1989.

TOPICS: soil erosion, erosion models
COMMENTS: Overview of a soil erosion model developed by the U.S. Department of Agriculture's Water Erosion Prediction Project (WEPP). Model user requirements, model structure, and experimental program for WEPP are summarized.

117. Larson, J.S. 1988. Wetland creation and restoration: An outline of the scientific perspective. p. 73-79. In: J. Zelazny and J.S. Feierabend, eds. Increasing Our Wetland Resources. Nat. Wildlife Fed. Proceedings, Oct. 1987, Washington D.C.

TOPICS: hydrology, soil development, wetland creation
COMMENTS: General. Addresses the importance of understanding hydrologic and soil processes in relation to vegetation responses when creating wetlands.

118. Legge, T.A., D.J. Herman, and B. Zamora. 1981. Effects of cattle grazing on mountain meadows in Idaho. Journal of Range Management 34(4): 324-328.

TOPICS: grazing effects
COMMENTS: Vegetation changes which occurred during 12 years of protection from grazing were documented in mountain meadows of north-central Idaho. Plant composition changes were evident on five sites studied, whereas herbage production was significantly less on the grazed than ungrazed areas at two of the sites. On average, the percent of bare ground and moss-covered areas were greater on grazed than ungrazed sites. Litter accumulation was greater, on average, on the ungrazed sites.

119. Leininger, W.C. 1988. Non-chemical alternatives for managing selected plant species in the western United States. U. S. Department of the Interior, Fish and Wildlife Service and University Cooperative Extension, Colorado State University, Fort Collins, CO. 48 p.

TOPICS: weed management
COMMENTS: A summary of literature on non-chemical plant control for 14 plant species, arranged by species specifically for land managers. The species include wild oats (*Avena fatua*), diffuse knapweed (*Centaurea diffusa*), spotted knapweed (*Centaurea maculosa*), Russian knapweed (*Centaurea repens*), musk thistle (*Carduus nutans*), Canada thistle (*Cirsium arvense*), field bindweed (*Convolvulus arvensis*), leafy spurge (*Euphorbia esula*), St. Johnswort (*Hypericum perforatum*), tall whitetop (*Lepidium latifolium*), giant foxtail (*Setaria faberi*), yellow foxtail (*Setaria glauca*), green foxtail (*Setaria viridis*), common cattail (*Typha latifolia*).

120. Leopold, L. 1990. Ethos, equity and the water resource. The Abel Wolman Distinguished Lecture, presented to the National Research Council, Feb. 15, 1990, National Academy of Sciences Auditorium. 14 p.

TOPICS: water resources, water policy
COMMENTS: Discusses an ethos, or an unwritten guiding belief in the maintenance of the hydrologic continuum (i.e., the effective operation of forces in the drainage basin that maintain a balance among processes of weathering, soil formation, water and sediment delivery to stream channels and the exit of water and sediment from the basin) in the administration of water resources. Evidence of how management fails to follow such an ethos and the effects of catastrophic change to the hydrologic continuum were explored. Discusses equity in administration -- a dedication to fairness, to consideration of various interests and treatment of all with some measure of equality.

121. Lienkaemper, G.W. and F.J. Swanson. 1987. Dynamics of large woody debris in streams in old-growth Douglas-fir forests. Canadian Journal of Forest Research 17:150-156.

TOPICS: riparian forest, woody debris
COMMENTS: Reports the dynamics of woody debris in streams, based on 7 to 9 years of observations in five stream reaches in old-growth Douglas-fir forests. Additions of woody debris is widely scattered in time and space and comes mainly from single trees rooted away from the streambank. Wind appears to be the major agent of wood entry into streams. Downstream movement is strongly related to length of individual pieces; most pieces that moved were shorter than bankfull width. (from authors' abstract)

122. Lowe, C.H., R.R. Johnson, and P.S. Bennett. 1986. Riparian lands are wetlands: the problem of applying eastern American concepts and criteria to environments in the North American southwest. p. 119-122. In: Hydrology and Water Resources in Arizona and the Southwest. Vol. 16. Proceedings: Glendale, AZ, April 19, 1986. American Water Resources Association, Arizona Section, Arizona-Nevada Academy of Science, Hydrology Section, and the Arizona Hydrological Society.

TOPICS: riparian classification, southwestern desert streams, hydrology
COMMENTS: The paper argues that riparian lands are wetlands relative to the surrounding uplands. By this definition, the driest wetlands are ephemerally watered riparian scrub systems supported by infrequent water and sometimes by flow of surface water only once or less during a year's time. Periodic wetlands support riparian systems that are also watered by subsurface flow or sheet flow from higher areas.

123. Majors, J.E. 1988. Opportunities to protect in-stream flows and wetland uses of water in California. U.S. Fish Wildl. Serv. Biol. Rep. 89(10). 76 pp.

TOPICS: instream flow, water rights
COMMENTS: The purpose of this report is to encourage cooperative and innovative thinking by all persons interested in in-stream flows, fish, wildlife, and watershed management at Federal, State, or local levels of government, as well as private individuals and wildlife organizations (from Introduction). Examples include riparian rights; wild and scenic rivers; stream evaluation programs; California Endangered Species Act; acquisition of land and water, including rights; wetlands preservation; and protection and enhancement.

124. Manci, K.M. 1989. Riparian ecosystem creation and restoration: a literature summary. U.S. Fish Wildl. Serv., Biol. Rep. 89(20). 59 pp.

TOPICS: bibliography, riparian ecosystems, riparian restoration, riparian creation
COMMENTS: Annotated bibliography addressing riparian functions (fish and wildlife habitat, hydrologic flow, erosion control and water quality improvement); planning for projects; techniques (planting, fencing, landforming, installing instream devices, and treating soil); monitoring; evaluation; and case studies.

125. Marks, J.S. and V. Saab Marks. 1988. Winter habitat use by Columbian sharp tailed grouse in western Idaho. J. Wildl. Manage. 52(4):743-746.

TOPICS: sharp-tailed grouse, wildlife habitat
COMMENTS: Habitat use by Columbian sharp-tailed grouse (*Tympanuchus phasianellus columbianus*) was studied during three winters in western Idaho. Grouse were closely associated with mountain shrub and riparian cover types, the only cover types that provided food and escape cover regardless of snow depth. Fruits of Douglas hawthorn (*Crataegus douglassi*) and buds of Saskatoon serviceberry (*Amelanchier alnifolia*) and

common chokecherry (*Prunus virginiana*). (from Abstract).

126. Marlow, C.B. 1988. Mitigating livestock impacts to streambanks within northern Rocky Mountain foothills riparian zones. p.147-150. In: Issues and Technology in the Management of Impacted Wildlife, Proceedings III, Nov. 2-4, 1987, Colorado Springs, CO. Boulder, CO: Thorne Ecological Institute, 1988. 177 p.

TOPICS: grazing strategies, grazing effects, streambank erosion
COMMENTS: The length of grazing time in riparian zones and soil conditions at the time of grazing appear to have greater impact on streambanks than the total numbers of cattle grazing.

127. Marron, D.C. 1989. Physical and chemical characteristics of a metal contaminated overbank deposit, west-central South Dakota, U.S.A. Earth Surface Processes and Landforms, 14:419-432.

TOPICS: water quality, sediment transport
COMMENTS: Overbank deposition of arsenic and other mine-tailing metals is discussed in relation to sediment transport.

128. Marzolf, G.R. 1978. The potential effects of clearing and snagging on stream ecosystems. U.S. Department of the Interior, Fish and Wildlife Service, Biological Services Program:FWS/OBS-78/14. 32 p.

TOPICS: bibliography, aquatic habitat, woody debris
COMMENTS: Reviews the biological and hydrological processes affected by stream obstruction/debris and the effects of removal of those obstructions on stream functions.

129. McAdoo, J.K., G.N. Back, M.R. Barrington, and D.A. Klebenow. 1986. Wildlife use of lowlands meadows in the Great Basin. p. 310-319. In: Transactions of the North American Wildlife and Natural Resources Conference: 51st Annual Meeting, 1986: Wildlife Management Institute, Washington, D.C.

TOPICS: mammals, small mammals, bird communities
COMMENTS: Documents the use of wetlands, riparian areas and marshes by bird and mammal species for the period 1978-80 (inventory phase) and for 1981-85 (research phase).

130. McCluskey, D.C., J. Brown, D. Bornholdt, D.A. Duff, and A.H. Winward. 1983. Willow planting for riparian habitat improvement. Tech. Note 363, U.S. Department of the Interior, Bureau of Land Management. 21 p.

TOPICS: planting, riparian enhancement, willow
COMMENTS: A technique is described for the planting of willow stem cuttings in riparian areas. Considerations before planning willow plantings are suggested.

131. McKee, A., J.E. Means, W.H. Moir, and J.F. Franklin. 1987. First-year recovery of upland and riparian vegetation in the devastated area around Mount St. Helens. p. 168-187. In: D.E. Bilderback (ed.), Mount St. Helens 1980: Botanical Consequences of the Explosive Eruption. University of California Press, Berkeley, CA.

TOPICS: riparian recovery, riparian plant communities
COMMENTS: A study with goals: to document first-year patterns of revegetation in the major habitats created within the devastated area around Mount St. Helens; to compare vegetative recovery in forested areas clearcut prior to the eruption, in blown-down forests, and in standing dead forests; to investigate the effects of snowpack in the blown-down forests on plant recovery; to compare recovery of riparian vegetation on sites in the devastated area with that on sites receiving only ashfall; and to establish a network of plots for the study of vegetative recovery in the future.

132. McLemore, C.E., and W.R. Meehan. 1988. Invertebrates of Meadow Creek, Union County, Oregon, and their use as food by trout. Res. Pap. PNW-RP-394. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 13 p.

TOPICS: stream invertebrates, aquatic habitat, salmonids
COMMENTS: From 1976 to 1980, invertebrates were collected from several reaches of Meadow Creek in eastern Oregon. Five sampling methods were used: benthos, drift, sticky traps, water traps and fish stomachs. A total of 372 taxa were identified, of which 239 were used as food by rainbow trout (steelhead; *Salmo gairdneri* Richardson). Of the taxa found in trout stomachs, 71 (29.5%) were terrestrial.

133. Medin, D.E. and W.P. Clary. 1989. Small mammal populations in a grazed and ungrazed riparian habitat in Nevada. Res.Pap. INT-413. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Research Station. 6p.

TOPICS: small mammals, grazing effects, biological diversity
COMMENTS: Community composition and relative abundance of small mammal populations in grazed and exclosed riparian zones at 6200 ft, northeastern Nevada, were monitored in late summer. The numbers of species trapped and the total numbers of individuals trapped were greater inside the protected areas than in the grazed areas. Species observed: deer mouse (*Peromyscus maniculatus*), western jumping mouse (*Zapus princeps*), least chipmunk (*Tamias minimus*), Great Basin pocket mouse (*Perognathus*

parvus), golden-mantled ground squirrel (*Spermophilus lateralis*), vagrant shrew (*Sorex vagrans*), long-tailed vole (*Microtus longicaudus*), montane vole (*Microtus montanus*), Townsend's ground squirrel (*Spermophilus townsendii*), northern pocket gopher (*Thomomys talpoides*), and bushy-tailed woodrat (*Neotoma cinerea*).

134. Medin, D.E., and W.P. Clary. 1990. Bird and small mammal populations in a grazed and ungrazed riparian habitat in Idaho. Res. Pap. INT-425. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Research Station. 8p.

TOPICS: bird communities, small mammals, grazing exclosure, biological diversity
COMMENTS: A survey of bird and small mammal populations (spring and later summer, respectively, in 1988 and 1989) in two 9 ha plots, one placed at the upstream end of a 122 ha grazing exclosure (grazing excluded from 1975), the other placed in the adjacent upstream grazed riparian zone. The Summit Creek study area is located in Custer County, ID, in the Little Lost River drainage. In 1989, there was little difference between grazed and ungrazed habitats in total breeding bird density, but presence of shorebirds in the grazed area caused the tendency for greater species richness, bird biomass and bird species diversity in the grazed habitat as compared with the ungrazed habitat. Small mammal populations were higher on the grazed than the ungrazed plots but species richness and diversity of the small mammal communities were higher in the ungrazed habitat.

135. Medin, D.E., and K.E. Torquemada. 1988. Beaver in western North America: An annotated bibliography, 1966 to 1986. Gen. Tech. Rep. INT-242. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Research Station. 18 p.

TOPICS: beaver, bibliography
COMMENTS: This annotated bibliography of 206 references is provided as a working tool for natural resource specialists, land-use planners and others charged with managing beavers and their habitats (from Abstract).

136. Medina, A.L. and S.C. Clark. 1988. Stream channel and vegetation changes in sections of McKnight Creek, New Mexico. Great Basin Naturalist 48(3):373-381.

TOPICS: channel morphology, riparian vegetation, grazing exclosure
COMMENTS: The effects of grazing on stream channel morphology and riparian vegetation were insignificant compared with channel adjustments caused by wildfire in the headwaters, high amounts of sedimentation in the upper channel and storm events. This result exemplifies the importance of overall watershed condition to channel stability and plant communities in the riparian zone.

137. Megahan, W.F. 1987. Increased sedimentation following helicopter logging and prescribed burning on granitic soil. p. 259-260. In: Erosion and sedimentation in the Pacific Rim: proceedings of the International Association of Hydrological Sciences, 3-7 August, 1987, Oregon State University, Corvallis, OR. IAHS publication; no. 165).

TOPICS: soil erosion, watershed
COMMENTS: A brief summary of a paired watershed study in a steep granitic landscape.

138. Michael, J.L., D.G. Neary and M.J.M. Wells. 1989. Picloram movement in soil solution and streamflow from a coastal plain forest. J. Environ. Qual. 18:89-95.

TOPICS: water quality, herbicide fate, riparian forest
COMMENTS: A study of the movement, on- and off-site, of the herbicide picloram and its residues, following aerial application of picloram to four forested watersheds. Movement was monitored in the mineral soil, soil solution, groundwater and streams.

139. Miller, L.K., and K. Schneller-McDonald. 1988. Wetland bibliographic data bases. p. 43-48. In: Mutz, K.M., D.J. Cooper, M.L. Scott and L.K. Miller (eds.). Restoration, Creation, and Management of Wetland and Riparian Ecosystems in the American West. Symposium, Nov. 14-16, 1988, Denver CO: Rocky Mountain Chapter of the Society of Wetland Scientists, Denver CO. 239 pp.

TOPICS: bibliography
COMMENTS: The paper is an overview of the structure of the Wetland Values Citation Data Base (WVCDB), the Wetland Creation/Restoration Data Base (CREATE).

140. Minckley, W.L. and J.N. Rinne. 1985. Large woody debris in hot-desert streams: An historical review. Desert Plants 7(3):142-153.

TOPICS: woody debris, southwestern desert streams
COMMENTS: Large-particulate organic debris is denied to present-day desert streams because of interception by impoundments and as a result of decimation of formerly extensive riparian vegetation. Historical records indicate a substantial, but sporadic, input of coarse debris (from high-elevation forests), which was reduced to finer particles through molar action in canyon-bound reaches of desert rivers. Historical changes, functions of large debris in the systems, and probable future conditions are reviewed.

141. Minshall, G.W., S.E. Jensen, and W.S. Platts. 1989. The ecology of stream and riparian habitats of the Great Basin region: a community profile. U.S. Fish Wildl. Serv. Biol. Rep. 85(7.24). 142 pp.

TOPICS: riparian classification, hydrology, geomorphology, riparian soils, riparian ecosystems
COMMENTS: Proposes a hierarchical framework for classification of riparian ecosystems of the Great Basin hydrographic region: hydrologic unit, e.g., region, subregion, basin, subbasin and tributary basin; geomorphic valley form, e.g., glacial valleys, fluvial canyons, alluvial valleys and lacustrine basins; water regime, e.g., permanently flooded, semi-permanently flooded, saturated, seasonally flooded and sub-irrigated; physiognomy of the community, e.g., forest, shrub, herb and moss/lichen, and non-vegetated physiognomic classes are cobble, gravel, sand and silt bars; community type, based on floristic similarities in both the overstory and understory; and descriptors, based on the functional attributes of riparian ecosystems.

142. Molloy, D.P. and R.H. Struble. 1988. A simple and inexpensive method for determining stream discharge from a streambank. Journal of Freshwater Ecology 4(4):477-481.

TOPICS: stream flow
COMMENTS: Describes a flotation method for measuring stream discharge small to moderate-sized streams without entering the stream.

143. Montana Riparian Association. 1990. Management of Riparian and Wetland Forested Ecosystems in Montana: Fourth Annual Montana Riparian Association Workshop. 5-7 September, 1990 in Whitefish, MT: Montana Riparian Association, School of Forestry, University of Montana, Missoula, MT.

TOPICS: riparian forest management, wetland management
COMMENTS: Abstracts of twelve presentations. Topics relate to fisheries, forestry, streamside management zones, biodiversity, global warming effects, riparian classification and inventory.

144. Moore, D.R.J., P.A. Keddy, C.L. Gaudet and I.C. Wisheu. 1988. Conservation of wetlands: do infertile wetlands deserve a higher priority? Biological Conservation 47:203-217.

TOPICS: biological diversity, wetlands
COMMENTS: Infertile wetlands had higher species richness and many more rare species than fertile wetlands. Further, infertile wetlands had a greater range of vegetation types than did fertile wetlands.

145. Morganweck, R. 1989. Status and trends of wetlands in the coterminous U.S. Renewable Resources Journal 7(3):6-7.

TOPICS: wetland management, wetland losses
COMMENTS: A summary of wetland area, ownership, conservation and losses.

146. Murphy, M.L. and K.V. Koski. 1989. Input and depletion of woody debris in Alaska streams and implications for streamside management. North American Journal Fisheries Management 9:427-436.

TOPICS: salmonid habitat, riparian forest, woody debris
COMMENTS: Natural rates of input and depletion of large woody debris (LWD) in southeast Alaska streams studied to provide a basis for managing streamside zones to maintain LWD for fish habitat after timber harvest.

147. Mutz, K.M., D.J. Cooper, M.L. Scott, and L.K. Miller (eds.). 1988. Restoration, Creation, and Management of Wetland and Riparian Ecosystems in the American West. Symposium, 14-16 Nov, 1988, Denver, CO: Rocky Mountain Chapter of the Society of Wetland Scientists, Denver, CO. 239 pp.

TOPICS: symposium, riparian restoration, riparian creation, wetlands management, wetland mitigation, wetland policy, wetland water rights, water quality, wildlife habitat
COMMENTS: Plenary addresses were: Public policy and Colorado Wetlands; Wetlands protection and water rights; A stream classification system; The influence of riparian/wetland systems on surface water quality; Riparian wildlife habitats: more, worth less, and under invasion; Mountain wetland vegetation dynamics.

148. Myers, L.H. 1989. Grazing and riparian management in southwestern Montana. p. 117-120. In: R.E. Gresswell, B.A. Barton and J.L. Kershner (eds.). Riparian Resource Management. An Educational Workshop. U.S. Department of the Interior, Bureau of Land Management. Billings, Montana. 193 p.

TOPICS: grazing systems, grazing management
COMMENTS: Standardized approaches to riparian grazing management are not practical. The results of 34 grazing systems in riparian zones are analyzed in terms of riparian recovery and important factors that apply to Montana are discussed.

149. Nachlinger, J.L. 1988. Soil-vegetation correlations in riparian and emergent wetlands, Lyon County, Nevada. U.S. Fish and Wildl. Serv. Biol. Rep. 88(17). 39 pp.

TOPICS: riparian classification, riparian soils, riparian plant communities
COMMENTS: The study tests a system for delineating wetlands by correlation of vegetation indices with soil types. Each plant was assigned a wetland indicator number, based on prepared plant lists or a provisional number for species not previously listed for

the area. Vegetation indices included the wetland indicator and either the plant density or percent cover. See Eicher (1988) and Baad (1988) for similar studies in California and explanation of methods.

150. Naiman, R.J., C.A. Johnston, and J.C. Kelley. 1988. Alteration of North American streams by beaver. BioScience 38(11):753-762.

TOPICS: beaver, hydrology, wetland creation
COMMENTS: A review of changes in the structure and dynamics of streams and related wetlands as beaver recolonize their historic habitat.

151. Neary, D.G., and J.L. Michael. 1989. Effect of sulfometuron methyl on ground water and stream quality in coastal plain forest watersheds. Water Resources Bulletin, 25: 617-623.

TOPICS: water quality monitoring, groundwater, herbicide fate
COMMENTS: An evaluation of off-site movement of a herbicide to streamflow, with sediment transport and by leaching into ground water on a sandy lower coastal plain flatwoods site.

152. Negri, S. 1989. The San Pedro riparian area. Arizona Highways, April 1989, 18-33.

TOPICS: riparian, southwestern desert streams
COMMENTS: Travelogue, including prehistoric and cultural histories.

153. Nilsson, C., G. Grelsson, M. Johansson, and U. Sperens. 1989. Patterns of plant species richness along riverbanks. Ecology 70(1):77-84.

TOPICS: riparian plant communities, biological diversity, riparian ecosystems
COMMENTS: Total species richness along two rivers increased with substrate heterogeneity and was at a maximum at intermediate levels of substrate fineness. Observation coincides with the hypothesis that species diversity and environmental heterogeneity should be closely related along rivers. On the rivers studied, ice scour was most likely a cause of substrate heterogeneity, causing patchiness by erosion, transport and deposition of soil material, by affecting bank height (flood height) and channel width.

154. Noon, K.F. 1989. Major implementation issues in protection of nation's wetlands. Renewable Resources Journal 7(3):14-15.

TOPICS: wetland policy implementation
COMMENTS: Brief discussion of six major wetlands protection implementation issues in Michigan.

155. O'Malley, R. 1989. Wetlands Protection: perspective of the states in long- term policy direction. Renewable Resources Journal 7(3):8-11.

TOPICS: wetland policy, wetland protection
COMMENTS: Spoken presentation from the perspective of the New Jersey experience.

156. O'Toole, R. 1988. Economic protection for riparian forests. Streamside management: riparian wildlife and forestry interactions. Seattle, WA: University of Washington, Institute of Forest Resources, 1988: p. 259-269.

TOPICS: economics of wetland protection
COMMENTS: Pricing natural resource values.

157. Oakley, A.L. 1988. Riparian management practices of the Bureau of Land Management. In: Streamside Management: Riparian Wildlife and Forestry Interactions. p. 191-196. University of Washington, Institute of Forest Resources, no. 59: Seattle, WA.

TOPICS: wetland policy implementation, BLM
COMMENTS: Policies for preparing plans and managing BLM lands and resources are based on applicable federal laws, Executive Orders, regulations, manuals, policy statements and other guidance from the Director and State Director for Oregon and Washington.

158. Odum, W.E. 1988. Predicting ecosystem development following creation and restoration of wetlands. p.67-70. In: J. Zelazny and J.S. Feierabend (eds.). Increasing Our Wetland Resources. National Wildlife Federation Proceedings, Oct. 1987, Washington D.C.

TOPICS: wetland creation, ecosystem development
COMMENTS: Suggests research questions addressing the development of plant communities, soil conditions and hydrology in created and restored wetlands.

159. Ogle, D. 1990. Willow poles help restore streambanks. Idaho Range News, April (1990), Soil Conservation Service (Boise).

TOPICS: streambank protection structures, riparian soils, channel morphology
COMMENTS: Willow cuttings and willow poles were planted to stabilize streambanks in the Henry's Lake area. Vertical banks on straight stream sections and meanders were planted. Snow-drift melt causing bank failure appeared to maintain the steep angles of unvegetated banks. Willow establishment reduced failures and resulted in shallower bank angles.

160. Olson, T.E., and F.L. Knopf. 1988. Patterns of relative diversity within riparian small mammal communities, Platte River watershed, Colorado. p. 379-386. In: R.C. Szaro, K.E. Severson, and D.R. Patton (tech. coords.). Management of Amphibians, Reptiles, and Small Mammals in North America: proceedings of the symposium; 1988, July 19-21; Flagstaff, AZ. Gen. Tech. Rep. RM-166. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station.

TOPICS: small mammals, wildlife habitat, biological diversity
COMMENTS: Focus of the study was to analyze patterns of small mammal similarity within and between riparian and adjacent upland sites in the same watershed and across the elevational gradient. In accordance with avifaunal studies in the same watershed (Knopf, 1985), riparian sites at the higher elevations contributed substantially to the regional diversity of small mammal populations. In order to conserve regional integrity in native small mammal faunas, the authors recommend that land uses allowed in and adjacent to high elevation riparian zones should be considered as carefully as those in lowland floodplains.

161. Padgett, W.G., A.P. Youngblood, A.H. Winward. 1989. Riparian community type classification of Utah and southeastern Idaho. R4-Ecol-89-01. U.S. Department of Agriculture, Forest Service, Intermountain Region. 191 p.

TOPICS: riparian classification, riparian soils, riparian plant communities, riparian management
COMMENTS: A community type classification system (no indication of successional status), based on approximately 600 sample stands. Distribution, vegetation composition, soils and successional status are discussed.

162. Pfister, R.D. 1990. Streamside management zones (SMZ)-- Delineation criteria and management guidelines. In: Montana Riparian Association. Management of Riparian and Wetland Forested Ecosystems in Montana: Fourth Annual Montana Riparian Association Workshop. 5-7 September, 1990 in Whitefish, MT: Montana Riparian Association, School of Forestry, University of Montana, Missoula, MT.

TOPICS: streamside management zone, SMZ, riparian forest
COMMENTS: Abstract from a spoken presentation. The Montana Riparian Association Management Guidelines Working Group has been working on a matrix of soil erosion hazards relative to management practices. SMZ width guidelines for substrates of high, medium and low erodibility classes, and for various slope classes presented.

163. Pfister, R.D. and K.W. Boggs. 1990. Methodology for riparian inventory and streamside management zone delineation on the Kootenai National Forest. In: Montana Riparian Association. Management of Riparian and Wetland Forested Ecosystems in Montana: Fourth Annual Montana Riparian Association Workshop. 5-7 September, 1990 in Whitefish, MT: Montana Riparian Association, School of Forestry, University of Montana, Missoula, MT.

TOPICS: riparian inventory, riparian forest
COMMENTS: A brief overview of a study to develop and demonstrate techniques for mapping wetlands and streamside management zones (based on Montana's BMPs, best management practices, and criteria being developed by a Montana Riparian Association Working Group) in heavily forested areas.

164. Platts, W.S. 1986. Managing riparian stream habitats. p.59-62. In: Proceedings of the Wyoming Water 1986 and Streamside Zone Conference, April 28-30, 1986, Casper, WY: Wyoming Water Research Center, University of Wyoming Agricultural Extension Service, University of Wyoming, Laramie, WY.

TOPICS: aquatic habitat, grazing strategies
COMMENTS: Recommends improved grazing management strategies. Describes riparian pasture and stream-corridor fencing methods for managing the riparian zones and discusses the effects of grazing time and species on riparian vegetation and stream health. Resilience to rare hydrologic events is an attribute of 'healthy' riparian zones. Riparian management should anticipate the rare event, particularly given the rapid climate changes predicted for the next century.

165. Platts, W.S. 1989. Compatibility of livestock grazing strategies with fisheries. p.103-110. In: R.E. Gresswell, B.A. Barton and J.L. Kershner (eds.). Riparian Resource Management. An Educational Workshop. U.S. Department of the Interior, Bureau of Land Management. Billings, MT. 193 p.

TOPICS: grazing systems, fishery
COMMENTS: Reviews effects of grazing on the stream condition and practiced strategies for grazing in the riparian.

166. Platts, W.S., and R.L. Nelson. 1989a. Characteristics of riparian plant communities and streambanks with respect to grazing in northeastern Utah. p. 73-81. In: R.E. Gresswell, B.A. Barton and J.L. Kershner (eds.). Riparian Resource Management: An Educational Workshop. U.S. Department of the Interior, Bureau of Land Management. Billings, Montana. 193 p.

TOPICS: plant communities, streambank stability, grazing effects, grazing exclosure
COMMENTS: A study of plant communities in grazed and ungrazed riparian zones. Streambank stability was related to the community type and grazed condition. Root systems, sod formation, horizontal rooting and depth extent affect the stability of vegetated streambanks.

167. Platts, W.S. and R.L. Nelson. 1989b. Stream canopy and its relationship to salmonid biomass in the Intermountain West. North American Journal of Fisheries Management 9:446-457.

TOPICS: salmonid habitat, streambank vegetation
COMMENTS: Salmonid biomass and stream canopy characteristics that affect thermal input were measured for streams in the Rocky Mountains and Great Basin. Relationships between salmonid biomass and overstory attributes differed between streams of the two regions. Salmonid biomass was strongly correlated with canopy density (+ve), light intensity (-ve) and sun arc (-ve) in the more productive Great Basin streams, but the same correlations were weak for the Rocky Mountain streams. Insolation is likely to be a limiting factor in the Great Basin streams studied, whereas other factors moderate its effect in the Rocky Mountain study streams.

168. Platts, W.S., R.J. Torquemada, M.L. McHenry, and C.K. Graham. 1989. Changes in salmon spawning and rearing habitat from increased delivery of fine sediment to the South Fork Salmon River, Idaho. Transactions of the American Fisheries Society 118:274-283.

TOPICS: salmonid habitat, sediment characteristics
COMMENTS: Levels of surface and subsurface fine sediment (<4.75 mm in diameter) were measured annually from 1965 to 1985 in spawning and rearing areas for chinook salmon *Oncorhynchus tschawytscha* and steelhead *O. mykiss* (formerly *Salmo gairdneri*) in the South Fork Salmon River, Idaho. A logging moratorium initiated in 1965, coupled with natural recovery and watershed rehabilitation, led to significant decreases in the amounts of fine sediments delivered to and stored in the South Fork Salmon River; this reduction led to a limited resumption to logging operations within the watershed in 1978. By 1985, surface and subsurface sediment levels in chinook salmon spawning areas averaged 19.2% of the surface area and 25.4% of the volume, respectively. However, additional recovery to pre-logging fine sediment levels is probably contingent on both further watershed recovery and the occurrence of flood flows capable of transporting material downstream. An equilibrium between incoming sediment from the watershed and outgoing sediment from the river appears to have been reached under flow regimes that have occurred since 1975 (from Abstract).

169. Platts, W.S., F.J. Wagstaff, and E. Chaney. 1989. Cattle and Fish on the Henry's Fork. Rangelands 11:58-62.

TOPICS: grazing, management
COMMENTS: A synopsis of the historic uses of the Henry's Fork of the Snake River, Idaho, and of present uses, and a summary of a streambank rehabilitation project along approximately 6 miles of the Henry's Fork. The study employs a stuttered deferred grazing rotation with selected rest. Electric fencing technology was employed. Data describing streambanks and vegetation for 1985 (grazed) and 1986 (rested) indicates potential for vegetation improvement with rest from grazing but does not yet indicate

changes in streambank characteristics.

170. Price, K.P. and M.K. Ridd. 1983. Riparian habitat on the Humboldt River, Deeth to Elco, Nevada. Univ. of Utah Res. Insit., Salt Lake City, UT. CRSC Rep. 83-3. 48 p.

TOPICS: riparian inventory, riparian management, remote sensing.
COMMENTS: Not complete copy. Infrared and conventional B/W photographs of the riparian zone were interpreted, vegetation maps produced and compared with historical maps. Lengthy review of river geomorphology and management impacts on the riparian.

171. Quigley, T.M. 1981. Estimating contribution of overstory vegetation to stream surface shade. Wildlife Society Bulletin 9(1):22-27.

TOPICS: riparian forest, aquatic habitat, stream shading
COMMENTS: A method for estimating the contribution of forest overstory to stream surface shade is presented. Characteristics measured are stream width, distance from vegetation to stream, orientation of stream, height of overstory, density of vegetation, crown measurement, location, date, and time. Examples given. (form authors abstract)

172. Ratliff, R.D., M.R. George, N.K. McDougald. 1987? Managing livestock grazing on meadows of California's Sierra Nevada. A manager-user guide. Cooperative Extension Leaflet No. 21421: Cooperative Extension University of California, Division of Agriculture and Natural Resources, University of California, Berkeley, CA.

TOPICS: management, grazing, meadows
COMMENTS: A management guide with recommendations for herbage productivity, timing, and length of grazing period for mountain meadows.

173. Reed, P.B., Jr. 1988a. National list of plant species that occur in wetlands: Intermountain (Region 8). U.S. Fish Wildl. Serv. Biol. Rep. 88(26.8). 76pp.

TOPICS: wetland plant species
COMMENTS: This plant list for the Intermountain Region (Region 8) is a subset of the National List. Plant species that occur in wetlands, as used in the National List, are species that have demonstrated an ability to achieve maturity and reproduce in an environment where all or portions of soil within the root zone become, periodically or continuously, saturated or inundated during the growing season (from abstract).

174. Reed, P.B., Jr. 1988b. National list of plant species that occur in wetlands: national summary. U.S. Fish Wildl. Serv. Biol. Rep. 88(24). 244 pp.

TOPICS: wetland plant species
COMMENTS: Plant species that occur in wetlands, as used in the National List, are species that have demonstrated an ability to achieve maturity and reproduce in an environment where all or portions of soil within the root zone become, periodically or continuously, saturated or inundated during the growing season (from abstract).

175. Reichmuth, D.R. 1990. Salmon River habitat structures evaluation of past work and proposals for future work. Report prepared by GEOMAX, Bozeman, MT.

TOPICS: in-stream structures, channel dynamics
COMMENTS: Recommends alternative to riprap treatment where channel is eroding highway and a sediment-separating structure to separate bottom water with high sediment load from low-sediment top water.

176. Ribaudo, M.O., and C.E. Young. 1989. Estimating the water quality benefits from soil erosion control. Water Resources Bulletin, 25:71-78.

TOPICS: non-point pollution, soil erosion
COMMENTS: A conceptual model for estimating water quality benefits from the control of soil erosion and results of such modelling is discussed.

177. Rickard, W.H., L.E. Rogers, B.E. Vaughan, and S.F. Liebetrau (eds.). 1988. Shrub-Steppe Balance and Change in a Semi-Arid Terrestrial Ecosystem. Developments in Agricultural and Managed-Forest Ecology Series, v. 20. Elsevier Science Publishing Company Inc., New York, NY. 272 p.

TOPICS: bibliography, riparian soils, hydrology, plant communities, bird communities
COMMENTS: Includes eight bibliographic chapters which focus on research conducted at the Arid Land Ecological Reserve, at the Hanford Site of the Lower Columbia River. 1. Introduction: Shrub-Steppe Lands; 2. Climate of the Hanford Site; 3. Soils: Carbon and Mineral Cycling Processes; 4. Water Balance; 5. Springs and Streams; 6. Plant Communities: Characteristics and Responses; 7. Terrestrial Animal Habitats and Population Responses; 7. Theoretical Perspective on Ecosystem Disturbance and Recovery. Topics covered which are relevant to the riparian include bird populations, hydrology of springs and streams and associated vegetation, and effects of land-uses on the sagebrush-bunchgrass uplands.

178. Rinne, J.N. 1988a. Effects of livestock grazing exclosure on aquatic macroinvertebrates in a montane stream, New Mexico. Great Basin Naturalist 48(2):146-153.

TOPICS: stream invertebrates, grazing effects, aquatic habitat, experimental design
COMMENTS: Based on a limited literature and this study, authors conclude that aquatic macroinvertebrates are useful biological indicators of grazing impacts on stream ecosystems. The authors emphasize the importance of collecting baseline data and of defining the variability of factors within study areas prior to implementing treatments. Linear changes in stream habitat may affect water quality and biota in the stream quite apart from the affects of grazing and exclosure.

179. Rinne, J.N. 1988b. Grazing effects on stream habitat and fishes: research design considerations. North American Journal of Fisheries Management 8:240-247.

TOPICS: grazing effects, fishery, experimental grazing design
COMMENTS: A 4-year study of a montane stream from which cattle grazing had been excluded for 10 years indicated that stream bank vegetation and stability were markedly improved and that stream substrate fines were somewhat reduced, but it indicated that fish populations were unaffected. Shortcomings of this case history study are common to similarly designed studies of grazing effects on fishes and their habitats. Three major deficiencies in research design are (1) lack of pretreatment data, (2) improper consideration of fishery management principles, and (3) linear positioning of treatments along a stream. Future research on riparian grazing effects must address these factors in addition to designs of long-term (10+ years) ecosystem (watershed) studies. (author's abstract)

180. Robertson, D., R. Garcia, and K. Piwowar. 1987. Comparison of wetland habitat in undisturbed and reclaimed phosphate surface-mined wetlands. p.180-193. In: Proceedings of the Fourteenth Annual Conference on Wetlands Restoration and Creation, May 14-15, 1987: Hillsborough Community College, Institute of Florida Studies, Plant City, FL.

TOPICS: wetland creation, reclamation
COMMENTS: Assessment of aquatic development in two reclaimed wetlands, one two years old and one year old. The reclamation methods are described briefly. Macroinvertebrate sampling and species richness results provided.

181. Samson, F.B., F.L. Knopf, and L.B. Hass. 1988. Small mammal response to the introduction of cattle into a cottonwood floodplain. p. 432-438. In: R.C. Szaro, K.E. Severson, and D.R. Patton (tech. coords.). Management of Amphibians, Reptiles, and Small Mammals in North America: proceedings of the symposium; 1988, July 19-21; Flagstaff, AZ. Gen. Tech. Rep. RM-166. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station.

TOPICS: small mammals, grazing effects, biological diversity
COMMENTS: Examined small mammal communities and vegetation structure before, during and after grazing (1 and 5 months following grazing) and between grazed (winter) and ungrazed (control) communities on South Platte River floodplain. Each small mammal species exhibited different habitat use compared to availability and few habitat variables differed on grazed versus ungrazed pastures.

182. Schultz, T.T., and W.C. Leininger. 1990. Differences in riparian vegetation between grazed areas and exclosures. Journal of Range Management 43(4):295-299.

TOPICS: plant communities, grazing effects, grazing exclosure
COMMENTS: Differences in vegetation structure were examined in a montane riparian zone in north-central Colorado after 30 years of cattle exclusion and continued, but reduced, grazing pressure. Total vascular vegetation, shrub, and graminoid canopy cover was greater in the exclosures as compared to grazed areas, while forb canopy cover was similar between treatments. Exclosures had nearly 2 times the litter cover, while grazed areas had 4 times more bare ground. The mean peak standing crop over the 2 years of the study in the exclosures was about 5 times that in the grazed areas. Cattle utilized about 65% of the current years growth of vegetation. (from authors abstract)

183. Schumann, R. 1989. Morphology of Red Creek, Wyoming, an arid-region anastomosing channel system. Earth Surface Processes and Landforms, 14:277-288.

TOPICS: channel dynamics, sediment characteristics
COMMENTS: Describes formation mechanisms of an anastomosing stream. Lateral channel migration is inhibited by the high cohesion of the silt and clay channel sediment.

184. Scott, J.M., B. Csuti, J.D. Jacobi, J.E. Estes. 1987. Species richness. A geographic approach to protecting future biological diversity. BioScience 37(11):782-788.

TOPICS: biological diversity, geographical information systems
COMMENTS: The thesis is that the most efficient and cost-effective way to retain maximal biological diversity in the minimal area is to focus efforts on species-rich areas. A geographical information systems mapping approach has identified unexpected inequities in present-time wildlife/nature preserves and the extent of protection of species-rich habitats.

185. Scott, J.M., et al. 1990. Gap analysis: protecting biodiversity using geographic information systems. A handbook for a workshop held at the University of Idaho, October 29-31, 1990, Moscow, ID.

TOPICS: biological diversity, gap analysis
COMMENTS: Chapters included are: (1) Introduction to biodiversity and conservation planning. (2) Mapping actual vegetation to predict regional biodiversity. (3) GIS data layers and mapping of biodiversity. (3) Interpreting the data. A section on the mapping of wetland and aquatic habitats (riparian areas) indicates the difficulties of dealing with small but species-rich land areas.

186. Sedell, J.R., F.H. Everest, and D.R. Gibbons. 1989. Streamside vegetation management for aquatic habitat. p.115-125. In: Proceedings of the National Silviculture Workshop: Silviculture for All Resources. Sacramento, CA, May 11-14, 1987. Wash, DC: U.S. Department of Agriculture, Forest Service, Timber Management; March 1989. 322 p.

TOPICS: riparian forest, management, stream shading, woody debris
COMMENTS: The authors discuss three aspects of silvicultural management of Riparian Management Areas (RMA): effects of extended timber rotations or permissible rates of entry into RMAs; organic debris standards and RMA width and shading requirements.

187. Sedgwick, J.A., and F.L. Knopf. 1987. Breeding bird response to cattle grazing of a cottonwood bottomland. J. Wildl. Manage. 51(1):230-237.

TOPICS: bird communities, grazing effects
COMMENTS: Habitat use by migratory bird species utilizing the grass-herb-shrub layer of vegetation in a riparian community (South Platt River, CO) subjected to late fall, early winter cattle grazing. Breeding bird populations on ungrazed control plots and fall-grazed plots (16 ha) were censused over a 10-day period in spring of 1982, 1984, and 1985. Ordination of six species on axes of forb cover and mid-level shrub density cover suggested different susceptibilities to grazing.

188. Sedgwick, J.A., F.L. Knopf. 1990. Habitat relationships and nest site characteristics of cavity-nesting birds in cottonwood floodplains. Journal Wildlife Management 54(1):112-124.

TOPICS: bird communities, biological diversity, riparian forest
COMMENTS: Lack of regeneration of cottonwood, decline in the dead limb lengths, trees with more than 1 m length of dead limb ($\geq$ 10 cm dia.), and snag density along the South Platte River will probably result in the decline in cavity-nesting birds. Red-headed woodpeckers and American kestrels have the most particular cavity requirements for nesting. An aging overstory with a lower percentage of small trees and a lack of regeneration, resulting in lower small tree densities, could adversely affect chickadees. A mosaic of sites of differing age structures in cottonwood floodplains accommodates a greater variety of cavity-nesting species.

189. Sheeter, G.R., and E.W. Claire. 1981. Use of juniper trees to stabilize eroding streambanks on the South Fork John Day River. U.S. Department of the Interior, Bureau of Land Management, Tech. Note:OR-1. 4 p.

TOPICS: streambank protection structures
COMMENTS: Streambank revetments created by anchorage of cut junipers on nearly vertical eroding streambanks were successful in stabilizing banks. Silt deposited in the revetments reduced bank slope. Lower energy of stream water in reaches with revetments favored revegetation.

190. Shepard, B.B. 1989. Evaluation of the U.S. Forest Service "COWFISH" model for assessing livestock impacts on fisheries in the Beaverhead National Forest, Montana. In: R.E. Gresswell, B.A. Barton and J.L. Kershner (eds.), Riparian Resource Management, U.S. Department of Interior, Bureau of Land Management. pp.23-33.

TOPIC: COWFISH model, grazing effects, fishery
COMMENTS: Use of the "COWFISH" model increases awareness of effects of livestock grazing on aquatic resources, but does not replace the need for sampling fish populations in grazing-impacted streams.

191. Sidle, R.C. 1990a. Overview of cumulative effects concepts and issues. p. 103-107. In: Forestry on the Frontier, Proceedings of the 1989 Society of American Foresters Annual Convention. Bethesda, MD.

TOPICS: watershed, cumulative effects, water quality, sediment transport COMMENT: Activities within a watershed and natural processes interact in a cumulative way to affect downstream water quality. Major emphasis of the paper is on water quality, nutrient cycling and chemical transport.

192. Sidle, R.C. 1990b. Cumulative effects of forest practices on erosion and sedimentation. p. 108-112. In: Forestry on the Frontier, Proceedings of the 1989 Society of American Foresters Annual Convention. Bethesda, MD.

TOPICS: erosion, sediment transport, compaction
COMMENT: Topics linked were onsite mass erosion, onsite surface erosion, sediment transport and routing, and downstream effects of these.

193. Sidle, R.C. and M.C. Amacher. 1990. Effects of mining, grazing and roads on sediment and water chemistry in Birch Creek, Nevada. p. 463-472. In: Watershed Planning and Analysis in Action, Symposium Proceedings of American Society of Civil Engineers, Durango, CO, 9-11 July, 1990.

TOPICS: sediment transport, water quality, cumulative effects, woody debris
COMMENTS: Assessment of the cumulative effects of mining and other land uses on water quality of Birch Creek showed that mine dumps and roads increased fine sediment deposits in some reaches. Fine sediments were trapped by woody debris. (from Abstract).

194. Slaughter, C.W., and J.W. Aldrich (compilers). 1989. Annotated bibliography on soil erosion and erosion control in subarctic and high-latitude regions of North America. Gen. Tech. Rep. PNW-GTR-253. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 234 p.

TOPICS: bibliography, erosion, hydrology
COMMENTS: Emphasizes the physical processes of upland soil erosion, prediction of soil erosion and sediment yield, and erosion control. The bibliography is divided into two sections: (1) references specific to Alaska, the Arctic and subarctic, and similar high-latitude settings; and (2) references relevant to understanding erosion, sediment production, and erosion control. Most of the cited works were published prior to 1981. (from abstract)

195. Smirnow, E. 1988. Water resources analyses: flow category analysis for flow duration curves. Unpublished report prepared for U.S. Department of Agriculture, Forest Service, Grand Mesa, Uncompahgre and Gunnison National Forest, Delta, CO.

TOPICS: hydrology
COMMENTS: Outlines a procedure for flow category analysis, intended to provide investigators with a tool to expedite and refine the generation of flow duration curves/tables, flow regime frequencies, and sediment yields.

196. Snyder, W.D. 1988. Stem cutting propagation of woody phreatophytes in eastern Colorado. p. 151-156. In: Mutz, K.M., D.J. Cooper, M.L. Scott and L.K. Miller (eds.). Restoration, Creation, and Management of Wetland and Riparian Ecosystems in the American West. Symposium, Nov. 14-16, 1988, Denver CO: Rocky Mountain Chapter of the Society of Wetland Scientists, Denver CO. 239 pp.

TOPICS: planting, riparian restoration
COMMENTS: Plantings of six native woody phreatophytes and one exotic species evaluated. Techniques and survival discussed.

197. Speaker, R.W., K.J. Luchessa, J.F. Franklin, and S.V. Gregory. 1988. The use of plastic strips to measure leaf retention by riparian vegetation in a coastal Oregon stream. The American Midland Naturalist 120(1):22-31.

TOPICS: riparian forest, organic debris
COMMENTS: Plastic strips, rather than leaves, were tested in studies estimating the rate of removal of coarse particulate organic matter from low-order forested streams. Processes involved in the retention of organic debris, both instream and on bank, are discussed in relation to the results of an experiment comparing the debris retention by streams sections with manipulated bank vegetation densities.

198. Stern, D.H. and M.S. Stern. 1980. Effects of bank stabilization on the physical and chemical characteristics of streams and small rivers: an annotated bibliography. U.S. Department of the Interior, Fish and Wildlife Service, Biological Services Program: FWS/OBS-80/12. 78 p.

TOPICS: bibliography, streambank protection structures, water quality
COMMENTS: An annotated bibliography. Included papers vary from technical documents to general discussions addressing the physical and chemical changes that result from bank stabilization techniques.

199. Stevens, M. 1990. Between land and Water: the wetlands of Idaho. Nongame wildlife leaflet # 9. Idaho Wildlife, 10(4):13-24.

TOPICS: wetlands, wetland plant species
COMMENTS: Essay introducing Idaho wetlands; history, soils, vegetation and wetland protection.

200. Stromberg, J.C., and D.T. Patten. 1988. Total protection: one management option. p. 61-62. In: Mutz, K.M., D.J. Cooper, M.L. Scott and L.K. Miller (eds.). Restoration, Creation, and Management of Wetland and Riparian Ecosystems in the American West. Symposium, Nov. 14-16, 1988, Denver CO: Rocky Mountain Chapter of the Society of Wetland Scientists, Denver CO. 239 pp.

TOPICS: plant communities, floodplain management, floodplain hydrology, seed dispersal
COMMENTS: Flood timing in relation to seed dispersal may affect community structure.

201. Stuber, P.J. (coord.). 1988. Proceedings of the national symposium on protection of wetlands from agricultural impacts. April 25-29, 1988, Fort Collins, CO: U.S. Department of Interior, Fish and Wild. Serv. Biol. Rep. 88(16). 221 pp.

TOPICS: symposium, wetlands, wetland management, wetlands policy implementation
COMMENTS: Formal papers focused on four main topics: (1) Agricultural Impacts on Wetlands, (2) National Legislative Wetland Protection Strategies, (3) State/Regional Wetland Protection Strategies, and (4) Management Protection Strategies (from abstract).

202. Suring, L.H., and P.A. Vohs, Jr. 1979. Habitat use by Columbian white-tailed deer. J. Wildl. Manage. 43:610-619.

TOPICS: white-tailed deer, wildlife habitat
COMMENTS: Study area was the Columbian White-Tailed Deer (*Odocoileus viginianus*) National Wildlife Refuge, on the Washington shore of the Columbia River. The climate was wet (245 cm) and mild, promoting continued growth of forage throughout the year. Communities providing both cover and forage were more heavily utilized than were communities providing cover or foliage alone. Browse was not used, apparently because of the year-round availability of green forage.

203. Swanson, S. 1989. Priorities for riparian management. Rangelands, 11(5):228-230.

TOPICS: grazing management, riparian enhancement
COMMENTS: Outlines general processes of stream channel erosion, floodplain functions, and the effects of vegetation on channel/floodplain interactions. Suggests criteria for prioritizing stream reaches for management activities.

204. Swenson, E.A. 1988. Progress in the understanding of how to reestablish native riparian plants in New Mexico. p. 144-150. In: Mutz, K.M., D.J. Cooper, M.L. Scott and L.K. Miller (eds.). Restoration, Creation, and Management of Wetland and Riparian Ecosystems in the American West. Symposium, Nov. 14-16, 1988, Denver CO: Rocky Mountain Chapter of the Society of Wetland Scientists, Denver CO. 239 pp.

TOPICS: planting, riparian restoration
COMMENTS: Reports on the development of a dormant pole planting technique and several operational projects. Guidelines for successful pole planting.

205. Szaro, R.C. 1989. Riparian and scrubland community types of Arizona and New Mexico. Desert Plants 9(3-4):69-124.

TOPICS: riparian classification, riparian plant communities
COMMENTS: Discusses the role of disturbance in riparian systems and presents the framework of a plant community classification system (commmunity type concept) for Arizona and New Mexico based on actual site data for existing vegetation.

206. Szaro, R.C. and S.C. Belfit. 1986. Herpetofaunal use of a desert riparian island and its adjacent scrub habitat. Journal of Wildlife Management 50(4):752-761.

TOPICS: reptiles, amphibians, biological diversity, riparian mitigation, riparian habitat mitigation
COMMENTS: The restriction of water flow in 1959 in Queen Creek in Whitlow Ranch Dam, Pinal County, Arizona, has caused the development of a 15-ha riparian island upstream behind the dam. The herpetofaunas of the riparian interior, riparian edge, desert wash, and upland habitats were sampled to assess the value of this type of development for mitigating continued losses of riparian habitat. Total species richness was 4 in the riparian interior, 7 in the riparian edge, 14 in the desert wash, and 15 in the desert upland. Many of the locally expected species were absent. The lack of invasion by typical riparian species probably results more from biogeographic considerations and flooding patterns than from structural and physical conditions of this newly formed riparian habitat. Regression models for species abundance emphasize the importance of using floristic information rather than summary variables in developing animal-habitat relationships. (from author's abstract) See also Szaro and Belfit (1987) for analysis of small mammal populations on the same riparian island.

207. Szaro, R.C. and S.C. Belfit. 1987. Small mammal use of a riparian desert riparian island and its adjacent scrub habitat. Research Note RM-473: U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station, Fort Collins, CO.

TOPICS: small mammals, riparian habitat mitigation, riparian mitigation
COMMENTS: A 15 ha riparian island was created upstream of a dam built in 1959. Small mammal populations in the riparian interior, riparian edge, desert wash and upland habitats surrounding the island were sampled to assess the value of this type of development (water flow restriction by dam) for mitigating continued loss of riparian habitat. The riparian island had few small mammals; more were recorded in the adjacent desert washes and desert upland habitats. Habitat models were developed for the desert shrew, Arizona pocket mouse, and Bailey's pocket mouse. (from author's abstract). The author concludes that potential is limited for using the development of a dense willow gallery forest resulting from changes in hydrologic regime to mitigate the loss of more structurally diverse riparian habitats. Canopy opening to increase development of shrub and herbaceous layers and import of riparian fauna from similar islands might improve the value of the mitigation riparian island as small mammal habitat. Species studied: desert shrew (*Notiosorex crawfordi*), Arizona pocket mouse (*Perognathus amplus*), Bailey's pocket mouse (*Perognathus baileyi*)

208. Szaro, R.C., S.C. Belfit, J.K. Aitkin, and R.D. Babb. 1988. The use of timed fixed-area plots and a mark-recapture technique in assessing riparian garter snake populations. p. 239-246. In: Management of Amphibians, Reptiles, and Small Mammals in North America. Proceedings of a symposium, July 19-21, 1988, Flagstaff, AZ: Gen. Tech. Rep. RM-166. U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station, Fort Collins, CO.

TOPICS: reptiles, wildlife habitat, grazing exclosure
COMMENTS: Wandering garter snake populations along a thin-leaf alder riparian community in northern New Mexico were sampled using timed fixed-area plots and a mark-recapture method. Both methods served to determine yearly differences and relative magnitude of snake density between years. Timed fixed-area plots enabled quantification of dramatic differences in snake abundance between exclosures and the grazed area. This sampling method yielded significant differences in exclosure population estimates for 1985 indicating that the spatial distribution of snakes might not be random. The more labor-intensive mark-recapture estimators are recommended for assessing impacts of riparian management regimes on snake populations.

209. Szaro, R.C. and J.N. Rinne. 1988. Ecosystem approach to management of southwestern riparian communities. p. 502-511. In: Transactions of the North American Wildlife and Natural Resources Conference: 53rd Annual Meeting, 1988: Wildlife Management Institute, Washington, D.C.

TOPICS: biological diversity, community ecology, grazing exclosure, grazing management
COMMENTS: The paper exemplifies common problems with ecosystem studies: riparian area responses to grazing exclosure, geographic variation and water impoundment. The response to grazing on riparian areas can vary depending on the populations measured, whether birds, reptiles, fish, small mammals, etc. Researchers and managers need to act cooperatively in study design so that testable hypotheses are addressed and proper controls applied. Sufficient preliminary data is often lacking.

210. Thomas, A.E., and C. Wentzell. 1986. A bibliography of riparian topics with emphasis on the intermountain west. Technical Bulletin 86-4. U.S. Department of the Interior, Bureau of Land Management, Idaho State Office, Boise, ID. 69 pp.

TOPICS: BLM, bibliography, riparian
COMMENTS: This bibliography will be available on request from A.E. Thomas at the Idaho State Office, BLM.

211. Thomas, J.W., C. Maser, and J.E. Rodiek. 1979. Edges. In: Wildlife habitats in managed rangelands – the great basin of southeastern Oregon. U.S. Department of Agriculture, Forest Service, Gen. Tech. Rep. PNW-189. Pacific Northwest Forest and Range Experiment Station, Portland, OR. 17 p.

TOPICS: biological diversity, wildlife habitat management
COMMENTS: Edge can be a measure of overall diversity of any area. Diversity is considered as inherent (community/community) edge, induced (successional stage/successional stage) edge and total edge. Size of stands are related to expected wildlife diversity (from abstract).

212. Tiedemann, A.R., D.A. Higgins, T.M. Quigley, and H.R. Sanderson. 1989. Stream chemistry responses to four range management strategies in eastern Oregon. Research Paper PNW-RP-413. Portland, OR. U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 9 p.

TOPICS: water quality, riparian forest
COMMENTS: Four grazing management strategies, implemented as part if the Oregon Range Evaluation Project. Nitrate-N, PO_4, Ca, Mg, K and Na levels and pH were monitored in streamwater. Grazing systems/strategies included season-long/no distribution management (8.2 ha/AUM), deferred rotation/uniform pasture use (7.7 ha/AUM), deferred rotation/intensive management with pasture improvement (2.8 ha/AUM), and rest rotation/intensive management with pasture improvement (2.8 ha/AUM).

213. Tiedemann, A.R., T.M. Quigley, T.D. Anderson. 1988. Effects of timber harvest on stream nutrient chemistry and dissolved nutrient losses in northeast Oregon. Forest Science 34(2):344-358.

TOPICS: water quality, riparian forest
COMMENTS: Study examined streamwater nutrient levels before and after partial clearcut of Pacific Northwest watersheds. The maximum treatment was clearcut of 41% of the watershed area in two blocks (3.6 and 8.5 ha), machine piling and burning of slash with machine scatter of unburned slash. For another watershed, 17% of the area was clearcut in two small blocks (0.8 and 2.4 ha). A selective harvest was performed in a third watershed and no harvest in the fourth control watershed.

214. Tung, Y.K. and W.E. Hathhorn. 1989. Determination of the critical locations in a stochastic stream environment. Ecological Monitoring, 45: 43-61.

TOPICS: water quality monitoring
COMMENTS: Discusses the location of critical points for dissolved O_2, i.e., minimum dissolved O_2, in streams best described by stochastic rather than deterministic models.

215. Turner, R.E. 1988. Secondary production in riparian wetlands. In: Transactions of the 53rd North American Wildlife and Natural Resources Conference 53:491-501.

TOPICS: ecosystem processes, riparian ecosystem
COMMENTS: Riparian wetlands have high primary production, provide fluctuating environments and an aquatic/terrestrial food web or chain, resulting in concentrated secondary production. Based on analyses of food chains, riparian ecosystems have more trophic species per number of trophic links than do nonwetland ecosystems. The vegetation canopy of riparian wetlands adds to maximum ecosystem dimension, which probably results in relatively longer food chains compared with other wetland ecosystem types.

216. U.S. General Accounting Office. 1988. Public rangelands. Some riparian areas restored but widespread improvement will be slow. GAO/RCED-88-105: Report to congressional requesters. U.S. General Accounting Office, Washington D.C. 85 p.

TOPICS: wetland policy evaluation, wetland policy implementation
COMMENTS: Examines federal efforts to restore degraded riparian areas on public rangelands, achievements to date, the extent of the problem remaining, and the factors that will impede more widespread progress in the future.

217. U.S.D.A.-Forest Service. 1990. Integrated riparian evaluation guide. Intermountain Region. Ogden, UT. 102 pp.

TOPICS: riparian evaluation, management, monitoring
COMMENTS: The guide provides an approach to stratify and classify riparian areas by integrating geomorphologic, hydrologic, aquatic, soil and vegetation information. Three levels of evaluation, management applications and interpretations, monitoring strategies suggested and several classification appendices supplied.

218. U.S.D.I.-Bureau of Land Management. 1989. Wyoming riparian management activity guide - 1989. U.S. Department of the Interior, Bureau of Land Management, Wyoming State Office, Cheyenne, Wy. 58 p.

TOPICS: BLM, wetland policy implementation
COMMENTS: Presents the Wyoming riparian strategy for BLM lands. Provides a breakdown of riparian projects, including planned actions, projects, monitoring, research, training, information transfer and funding options.

219. U.S.D.I.-Bureau of Land Management. 1990. Fish and Wildlife 2000. Annual progress report, fiscal year 1990. U.S. Department of the Interior, BLM, Washington, D.C. 29 p.

TOPICS: BLM
COMMENTS: Summary of projects implemented under the BLM "Fish and Wildlife 2000 - A Plan for the Future" and of future fish and wildlife projects. Includes habitat management.

220. U.S.D.I.-Fish and Wildlife Service. 1980. Riparian ecosystems: a preliminary assessment of their importance, status and needs. Eastern Energy and Land Use Team, National Water Resources Analysis Group, U.S. Fish and Wildlife Service, Kearneysville, WV. 13 p.

TOPICS: riparian ecosystems
COMMENTS: A preliminary assessment reflecting the perspective which led to the development of a Fish and Wildlife Service riparian program.

221. U.S.D.I.-Fish and Wildlife Service. 1990. Wetlands. Meeting the president's challenge. U.S. Department of the Interior, Fish and Wildlife Service: 1990 Wetlands Action Plan. 64 p.

TOPICS: wetland protection, policy implementation
COMMENTS: Document describes the role of the U.S. Fish and Wildlife Service in contributing to the President's goal of "no net loss" of the nation's wetlands.

222. Valiela, D. and P.H. Whitfield. 1989. Monitoring strategies to determine compliance with water quality objectives. Water Resources Bulletin, 25:63-69.

TOPICS: water quality monitoring
COMMENTS: Two sampling strategies designed to test for compliance with water quality objectives are examined for, (1) objectives based on long-term mean requirements, and (2) for objectives based on maximum allowable concentrations.

223. Vinson, M.R. 1988. Sediment dynamics in meandering and straight sections of a relocated stream channel. p.76-87. In: Mutz, K.M., D.J. Cooper, M.L. Scott and L.K. Miller (eds.). Restoration, Creation, and Management of Wetland and Riparian Ecosystems in the American West. Symposium, Nov. 14-16, 1988, Denver CO: Rocky Mountain Chapter of the Society of Wetland Scientists, Denver CO. 239 pp.

TOPICS: channel hydraulics, sediment transport, sediment storage
COMMENTS: Sediment dynamics examined for meandering and straight sections of a relocated stream channel in coarse alluvium.

224. Walker, M.D., D.A. Walker, and K.R. Everett. 1989. Wetland soils and vegetation, arctic foothills, Alaska. U.S. Fish Wildl. Serv. Biol. Rep. 89(7). 89 pp.

TOPICS: wetland soils, wetland plant species
COMMENTS: Analyses of relationships between hydric soils and wetland plant species in the northern foothills of the Brooks Range, Alaska. The site is considered to be representative of broad regions of acidic tussock tundra in the foothills. Seven soil subgroups identified. Weighted and index averages were calculated for each of 84 samples by weighing each species according to its wetland indicator status in a published list of vascular wetland plants of the U.S. Analysis of variance among soil types using averages based on vascular species alone or in combination with cryptogamic species led to a highly significant distinction between hydric and non-hydric soils. Cryptogams, lichen-moss crusts on the soil surface which have not been reviewed for wetland status, did not separate the soil types properly.

225. Walters, M.A., R.O. Teskey, and T.M. Hinckley. 1980. Impact of water level changes on woody riparian and wetland communities. Volume VIII. Pacific Northwest and Rocky Mountain Regions. U.S. Department of the Interior, Fish and Wildlife Service, Biological Services Program: FWS/OBS-78/94. 46 p.

TOPICS: riparian plant communities, watertable effects, bibliography
COMMENTS: Impacts of flooding and drought on riparian zone vegetation, specifically mountainous areas, northern California, Washington, Oregon, Montana, Idaho, New Mexico and Arizona.

226. Weber, C.I. et al., 1990. Short-term methods for estimating the chronic toxicity of effluents and receiving waters to freshwater organisms. Second Edition. Methods Manual, No. PB 89-207 013/AS. Cincinatti, OH: U.S. Environmental Protection Agency, Environmental Monitoring Systems Laboratory.

TOPICS: water quality monitoring
COMMENTS: A project summary available in files. Methods for estimating the chronic toxicity to the fathead minnow (*Pimephales promelas*), a cladoceran (*Ceriodaphnia dubia*), and a green alga (*Selenastrum capricornutum*).

227. Welling, C.H., R.L. Pederson, and A.G. van der Valk. 1988. Temporal patterns in recruitment from the seed bank during drawdowns in a prairie wetland. Journal of Applied Ecology 25:999-1007.

TOPICS: emergent wetland plants, wetlands seed bank
COMMENTS: Describes seasonal patterns of seedling recruitment, assesses the potential impact on recruitment of environmental conditions during drawdowns and compares vegetation produced by drawdowns lasting 1 or 2 years.

228. Wesche, T.A., D.W. Reiser, V.R. Hasfurther, W.A. Hubert, Q.D. Skinner. 1989. New technique for measuring fine sediment in streams. North American Journal of Fisheries manag ement 9:234-238.

TOPICS: hydrology, sediment characteristics
COMMENTS: Evaluation of sediment trapping capabilities of modified Whitlock-Vibert boxes under laboratory and field conditions and comparison with sediment trapped in adjacent streambed gravels.

229. West, R.A., S.J. Paustian and J.R. Martin. 1989. A proposed streamside riparian mapping system for the Tongass National Forest. In: Proceedings of watershed '89: a conference on the stewardship of soil, air and water resources: Juneau, Alaska, March 21-23, 1989. Juneau, AK: U.S. Department of Agriculture, For. Serv., Alaska Region, 1989, p. 73-85.

TOPICS: riparian inventory, riparian soils, riparian plant communities, channel morphology, geomorphology
COMMENTS: A hierarchical inventory utilizing GIS technology: Level I, identifies watershed boundaries, areas and is used to estimate annual precipitation and compute water budgets; Level II, delineates boundaries between the aquatic-riparian ecosystems and the surrounding terrestrial environment by overlaying the Soil/Plant Association Layer (delineates landform), the Channel Type Layer and the Watershed Layer; Level III, comprises mapping of the aquatic and riparian ecosystems; and Level IV, maps specific riparian sites as defined by particular plant associations with specific soils and channel types.

230. Williams, S.E., and P.D. Stahl. 1987. Importance of mycorrhizal fungi in land revegetation. p. 72-89. Proceedings Thirty-Ninth Annual Meeting, Great Plains Agricultural Forestry Committee, June 22-25, 1987. Vol. 39.

TOPICS: soil fungi
COMMENTS: A review of the biology and applications in revegetation of mycorrhizae. It seems that loss of mycorrhizal inoculum might be a concern where revegetation of degraded riparian areas or range with sensitive species is concerned.

231. Winward, A.H. and W.G. Padgett. 1989. Special considerations when classifying riparian areas. p. 186-192. In: Land Classifications Based on Vegetation: Applications for Resource Management. Proceedings: Moscow, ID, November 17-19, 1987. Ogden UT: Intermountain Research Station, Gen. Tech. Rep. INT; 257.

TOPICS: riparian classification, riparian plant communities, channel dynamics
COMMENTS: Uses a concept of riparian complexes, groups of riparian community types, to classify riparian zones, their condition and goals for riparian enhancement.

232. Wood, J.C., and M.K. Wood. 1988. Infiltration and water quality on range sites at Fort Stanton, New Mexico. Water Resour. Bull., 24(2):317-323.

TOPICS: soil infiltration rates, grazing effects
COMMENTS: Examined soil infiltration rates, sediment concentration and runoff water quality for range sites on a mesa top, hillside slopes and on valley bottom with varied grazing treatments and fertilization (valley bottom only). Soil infiltrability on grassland was susceptible to grazing. Short-duration grazing of pinyon pine-juniper treatments did not affect infiltration. Fertilization of bottomlands with soil conditions that favored plant growth increased plant biomass and cover. Higher stocking rates can be achieved if plant cover and biomass are sufficient to offset adverse effects of increased animal disturbance. Fertilized bottomlands have increased chemical nutrient losses.

233. Zube, E.H. and D.E. Simcox. 1987. Arid lands, riparian landscapes and management conflicts. Environmental Management 11(4):529-535.

TOPICS: riparian, management
COMMENTS: Reports on a mail survey of the perceptions, attitudes, and opinions of the general public and special interest groups toward a riparian landscape in the Sonoran Desert. A specific point of enquiry is the relative position of professional resource managers compared with other groups on issues such as land use planning, appropriate management prescriptions, and appropriate land uses adjacent to riparian areas. Discriminant analysis of response data reveals significant differences among several special interest groups and the general public, and identifies an important challenge for the managers who are more aware of the fragility of arid lands and riparian ecosystems and of threats to their continued productivity posed by rapid urban expansion.

234. Zwank, P.J., R.D. Sparrowe, W.R. Porath, and O. Torgerson. 1979. Utilization of threatened bottomland habitats by white-tailed deer. Wildl. Soc. Bull. 7:226-232.

TOPICS: white-tailed deer, wildlife habitat
COMMENTS: White-tailed deer (*Odocoileus viginianus*) were monitored from 1971 to 1978 to document their utilization of bottomland habitats threatened by water resource development (Swan Lake National Wildlife Refuge, bottomland in north-central Missouri). Data collected support other observations that deer in agricultural areas of the Midwest utilize bottomland habitats throughout the year. The destruction of naturally vegetated bottomlands constitutes a threat to viable white-tailed deer populations.

SPECIES LIST OF ANIMALS APPEARING IN CITED PAPERS

Mammals

Arizona pocket mouse ..... *Perognathus amplus*
Bailey's pocket mouse ..... *Perognathus baileyi*
bushy-tailed woodrat ..... *Neotoma cinerea*
deer mouse ..... *Peromyscus maniculatus*
desert shrew ..... *Notiosorex crawfordi*
golden-mantled ground squirrel ..... *Spermophilus lateralis*
Great Basin pocket mouse ..... *Perognathus parvus*
least chipmunk ..... *Tamias minimus*
long-tailed vole ..... *Microtus longicaudus*
montane vole ..... *Microtus montanus*
mule deer ..... *Odocoileus nemionus*
northern pocket gopher ..... *Thomomys talpoides*
Townsend's ground squirrel ..... *Spermophilus townsendii*
vagrant shrew ..... *Sorex vagrans*
western jumping mouse ..... *Zapus princeps*
white-tailed deer ..... *Odocoileus virginianus*

Birds (non-game birds not listed)

Columbian sharp-tailed grouse ..... *Tympanuchus phasianellus columbianus*

Fish

chinook salmon ..... *Oncorhynchus tschawytscha*
steelhead ..... *Oncorhynchus mykiss*, formerly *Salmo gairdneri*

Reptiles and Amphibians

Dunn's salamanders ..... *Plethodon dunni*
Olympic salamanders ..... *Rhyacotriton olympicus*
Pacific giant salamanders ..... *Dicamptonensatus*
tailed frogs ..... *Ascaphus truei*

BLM-ID-PT-91-001-4351